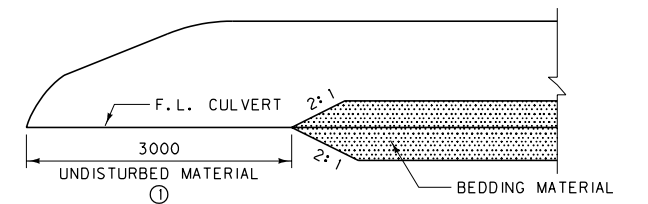
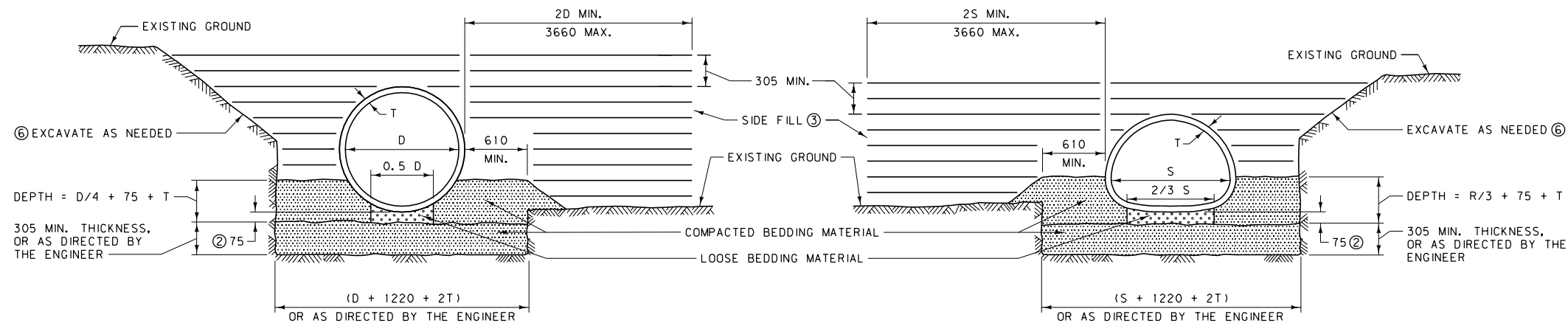


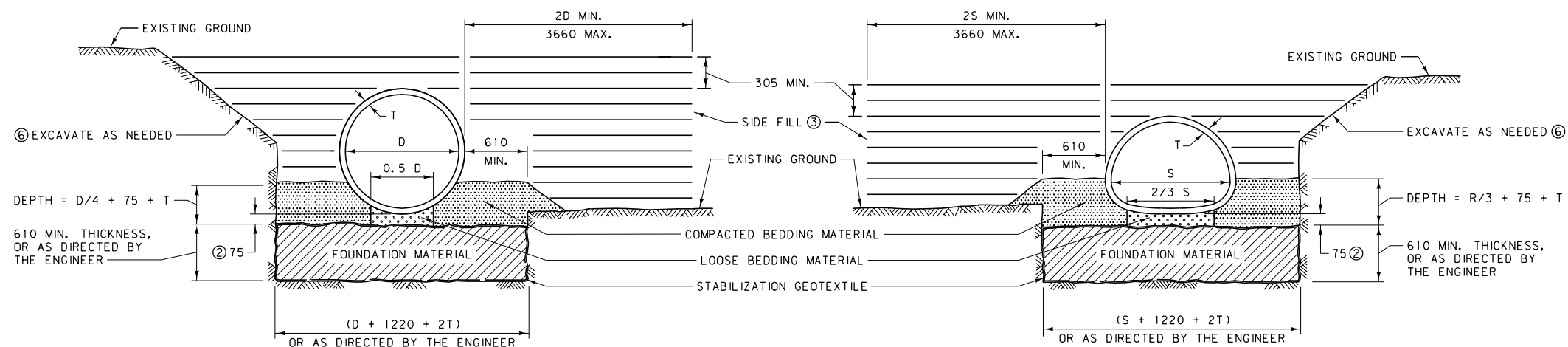
1-STANDARD BEDDING INSTALLATION



PIPE END DETAIL



2-ROCK




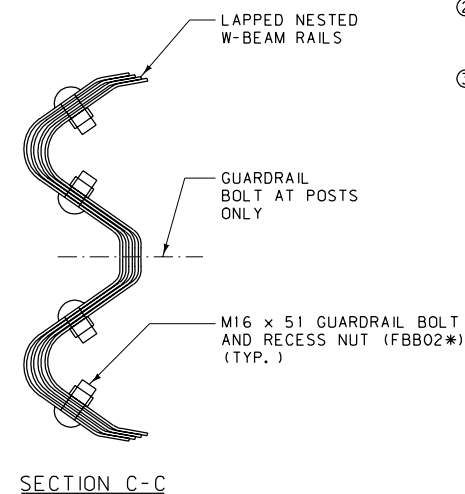
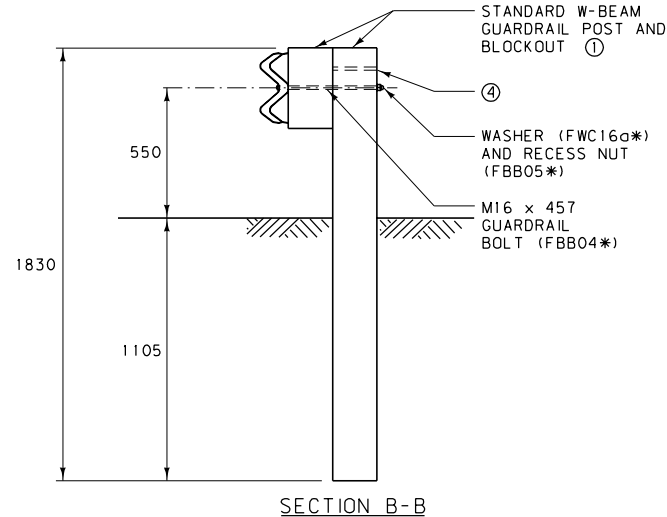
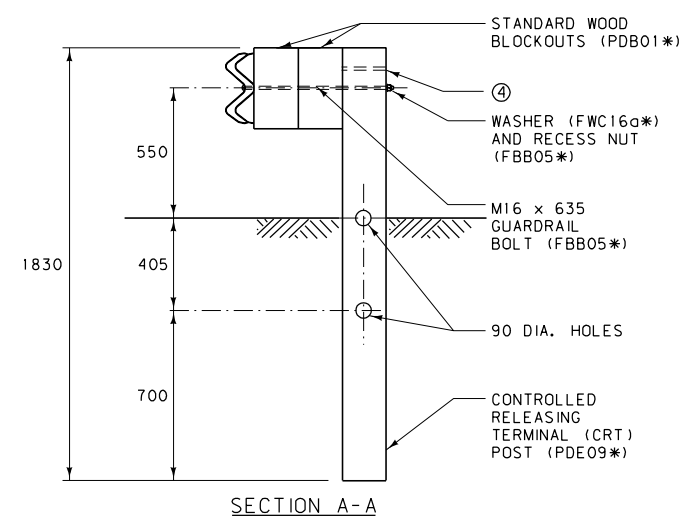
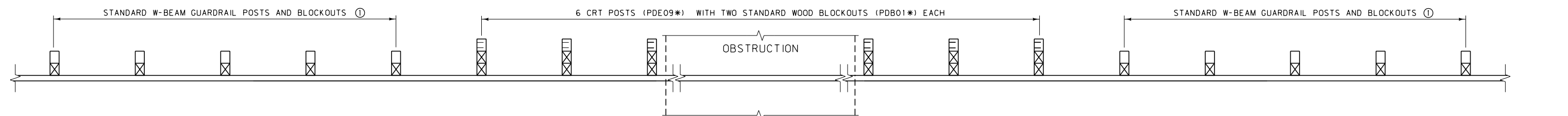
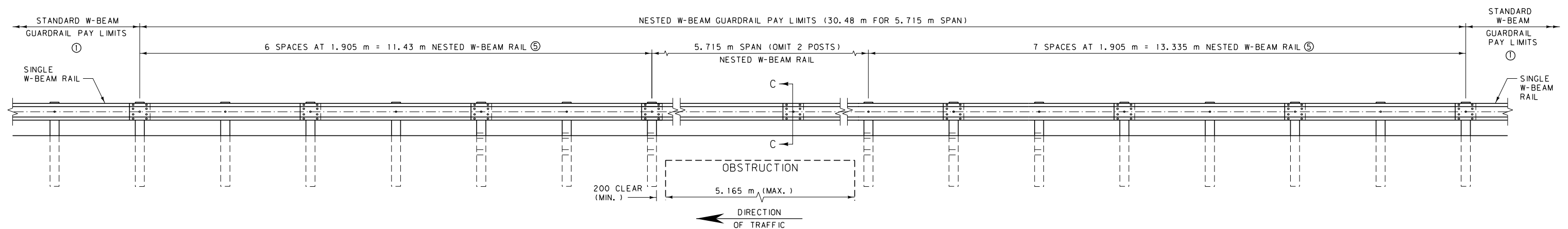
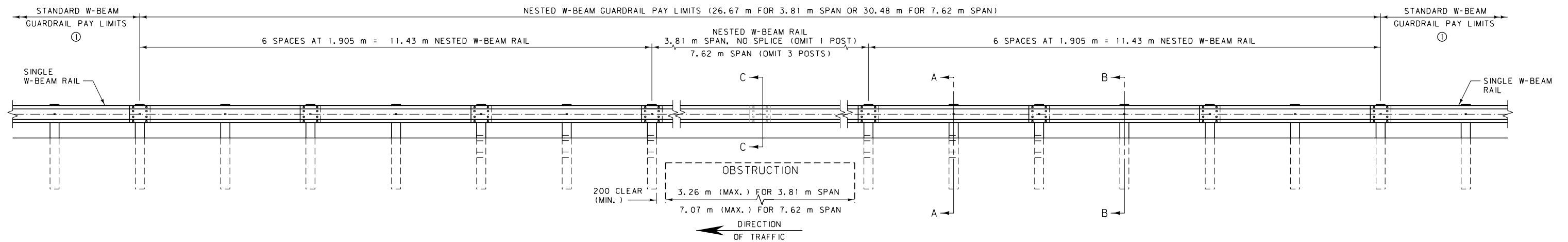
3-FOUNDATION STABILIZATION

NOTES:

- ① DO NOT EXTEND BEDDING MATERIAL TO THE END OF THE PIPE. LEAVE 3000 mm OF UNDISTURBED MATERIAL AT EACH END UNLESS OTHERWISE NOTED IN PLANS. SEE PIPE END DETAIL.
- ② PLACE LOOSE BEDDING MATERIAL UNIFORMLY IN THE BOTTOM OF THE TRENCH AND SHAPE TO FIT BOTTOM OF PIPE. THE MINIMUM THICKNESS BEFORE PLACING PIPE IS 75 mm, 1050 mm AND 1200 mm RCP IRR. REQUIRE 100 mm DEPTH OF LOOSE BEDDING MATERIAL TO ACCOMMODATE BELL THICKNESS. AFTER LAYING CULVERT, COMPACT BEDDING MATERIAL AT HAUNCHES AND SIDES OF PIPE.
- ③ COMPACT SIDE FILL IN 155 mm LOOSE LAYERS TO DENSITY SPECIFIED FOR ADJACENT EMBANKMENT. SEE SECTION 203.03.3 OF THE STANDARD SPECIFICATIONS FOR THE DENSITY REQUIREMENTS.
- ④ SEE SECTION 701.04 OF THE STANDARD SPECIFICATIONS FOR BEDDING AND FOUNDATION MATERIAL REQUIREMENTS.
- ⑤ DIMENSIONS D, S AND R ARE INSIDE PIPE DIAMETER, SPAN AND RISE. DIMENSION T IS THE CULVERT SHELL THICKNESS FOR CONCRETE OR CORRUGATION WIDTH FOR METAL. CORRUGATION WIDTHS ARE TYPICALLY 13 mm FOR 1200 mm EQUIVALENT SIZE METAL CULVERTS AND SMALLER.
- ⑥ EXCAVATE A SUFFICIENT AMOUNT TO PROVIDE A SAFE WORKING ENVIRONMENT AND TO ALLOW ACHIEVEMENT OF ALL CULVERT INSTALLATION AND COMPACTION REQUIREMENTS. SLOPE, BENCH OR PROVIDE SHORING FOR ALL EXCAVATIONS IN ACCORDANCE WITH THE U.S. DEPARTMENT OF LABOR, OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA) SAFETY AND HEALTH REGULATIONS FOR CONSTRUCTION.

ALL DIMENSIONS ARE MILLIMETERS  
(mm) UNLESS OTHERWISE NOTED.

| DETAILED DRAWING  |          |
|---|----------|
| REFERENCE   | DWG. NO. |
| STANDARD SPEC.  | 603-18   |
| SECTION 207, 603, 701   |          |
| CULVERT BEDDING FOR<br>MAINLINE CROSSINGS 1200 mm<br>EQUIVALENT & SMALLER   |          |
| EFFECTIVE: APRIL 2006   |          |
|  MONTANA DEPARTMENT<br>OF TRANSPORTATION |          |




NOTES:

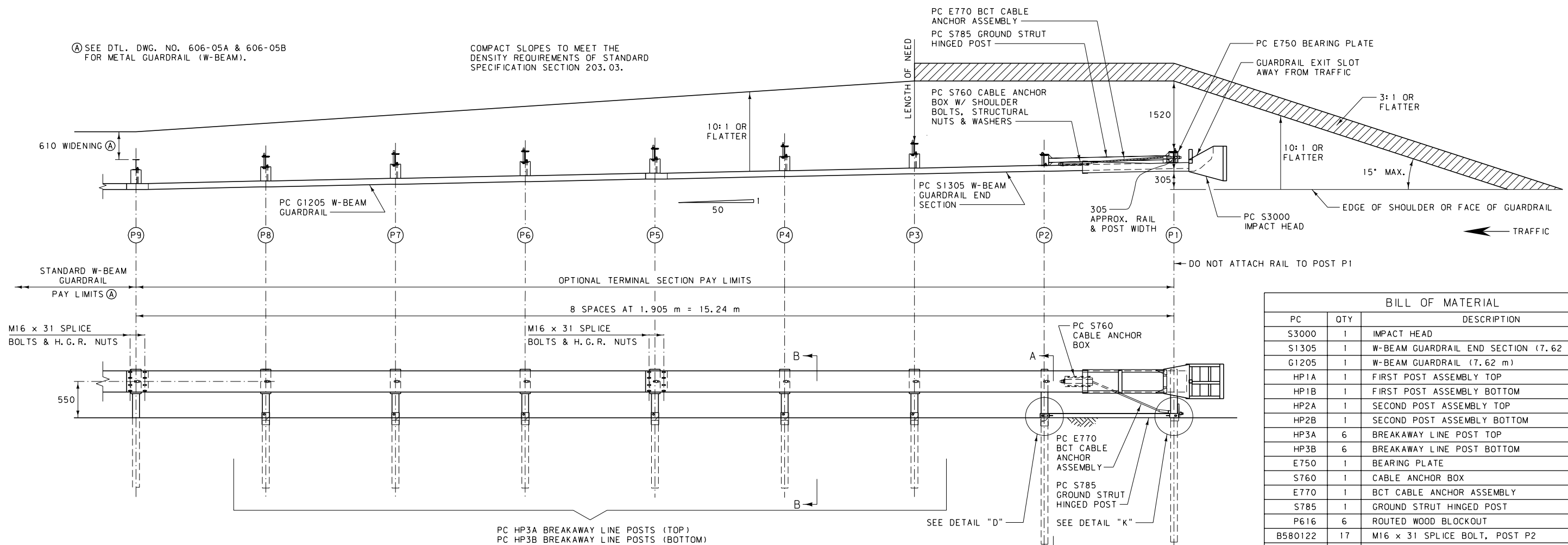
- ① SEE DTL. DWG. NO. 606-05A AND 606-05B FOR STANDARD W-BEAM GUARDRAIL AND ASSOCIATED HARDWARE.
- ② USE TWO STANDARD W-BEAM RAILS (RWM02a-b\* OR RWM22a-b\*) FOR NESTED W-BEAM.
- ③ LAP ALL NESTED W-BEAM RAIL IN THE DIRECTION OF ADJACENT TRAFFIC.

- ④ ALL POSTS ARE TO HAVE A SECOND BOLT HOLE AT 75 ABOVE THE FIRST.
- ⑤ THE SPLICE LOCATIONS ON THE 5.175 m SPAN MAY BE SHIFTED DOWNSTREAM BY 1.905 m.
- ⑥ DO NOT INSTALL NESTED W-BEAM GUARDRAIL FOR OBSTACLES WITHIN 2.2 m OF THE FACE OF THE RAIL.

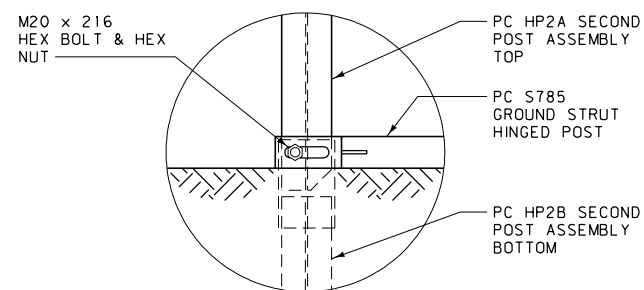
\* SEE DTL. DWG. NO. 606-80 FOR SCHEDULE OF GUARDRAIL HARDWARE.

ALL DIMENSIONS ARE MILLIMETERS (mm) UNLESS OTHERWISE NOTED.

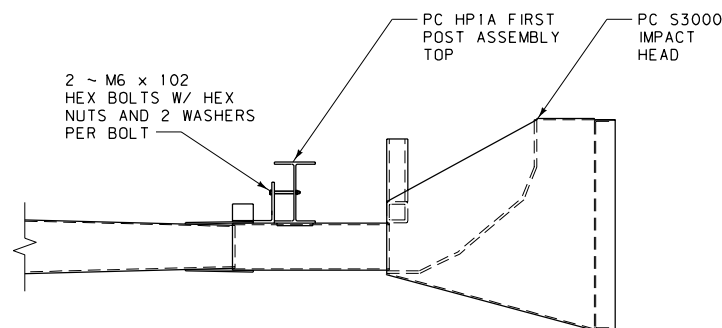
| DETAILED DRAWING   |                                      |
|--|--------------------------------------|
| REFERENCE  | DWG. NO.                             |
| STANDARD SPEC.   | 606-09                               |
| SECTION 606  |                                      |
| NESTED W-BEAM GUARDRAIL  |                                      |
| EFFECTIVE: APRIL 2006  |                                      |
|  serving you with pride | MONTANA DEPARTMENT OF TRANSPORTATION |



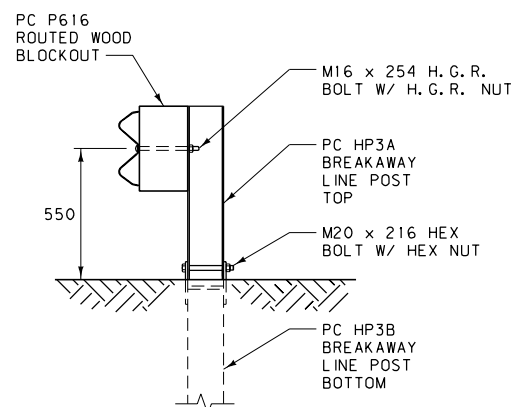
| BILL OF MATERIAL |     |                                       |
|------------------|-----|---------------------------------------|
| PC               | QTY | DESCRIPTION                           |
| S3000            | 1   | IMPACT HEAD                           |
| S1305            | 1   | W-BEAM GUARDRAIL END SECTION (7.62 m) |
| G1205            | 1   | W-BEAM GUARDRAIL (7.62 m)             |
| HP1A             | 1   | FIRST POST ASSEMBLY TOP               |
| HP1B             | 1   | FIRST POST ASSEMBLY BOTTOM            |
| HP2A             | 1   | SECOND POST ASSEMBLY TOP              |
| HP2B             | 1   | SECOND POST ASSEMBLY BOTTOM           |
| HP3A             | 6   | BREAKAWAY LINE POST TOP               |
| HP3B             | 6   | BREAKAWAY LINE POST BOTTOM            |
| E750             | 1   | BEARING PLATE                         |
| S760             | 1   | CABLE ANCHOR BOX                      |
| E770             | 1   | BCT CABLE ANCHOR ASSEMBLY             |
| S785             | 1   | GROUND STRUT HINGED POST              |
| P616             | 6   | ROUTED WOOD BLOCKOUT                  |
| B580122          | 17  | M16 x 31 SPLICE BOLT, POST P2         |
| B580904A         | 1   | M16 x 229 HEX BOLT                    |
| B581002          | 6   | M16 x 254 H.G.R. BOLT                 |
| N050             | 24  | M16 H.G.R. NUT                        |
| W050             | 2   | M16 WASHER                            |
| B340854A         | 7   | M20 x 216 HEX BOLT                    |
| N030             | 7   | M20 HEX NUT                           |
| N100             | 2   | M24 ANCHOR CABLE HEX NUT              |
| W100             | 2   | M24 ANCHOR CABLE WASHER               |
| B140404          | 2   | M6 x 102 HEX BOLT                     |
| N014             | 2   | M6 HEX NUT                            |
| W014             | 4   | M6 WASHER                             |
| SB58A            | 8   | CABLE ANCHOR BOX SHOULDER BOLT        |
| N055A            | 8   | M12 A325 STRUCTURAL NUT               |
| W050A            | 16  | M14 (27 O.D.) A325 STRUCTURAL WASHER  |



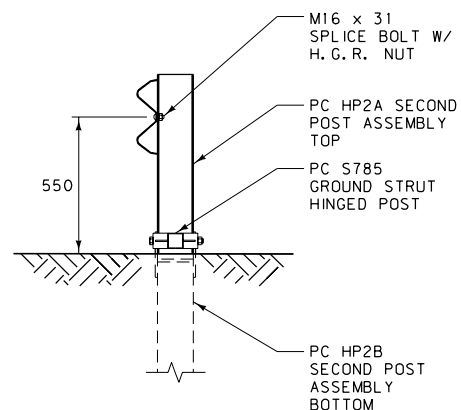
DETAIL D  
(AT POST P2)



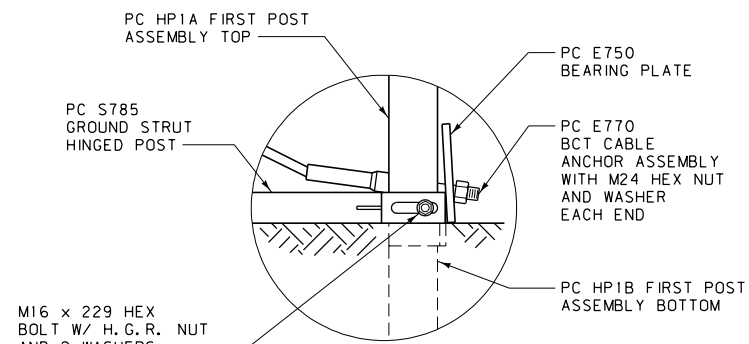
IMPACT HEAD CONNECTION DETAIL



SECTION B-B  
(TYP. AT POSTS P3 THRU P8)



SECTION A-A  
(AT POST P2)




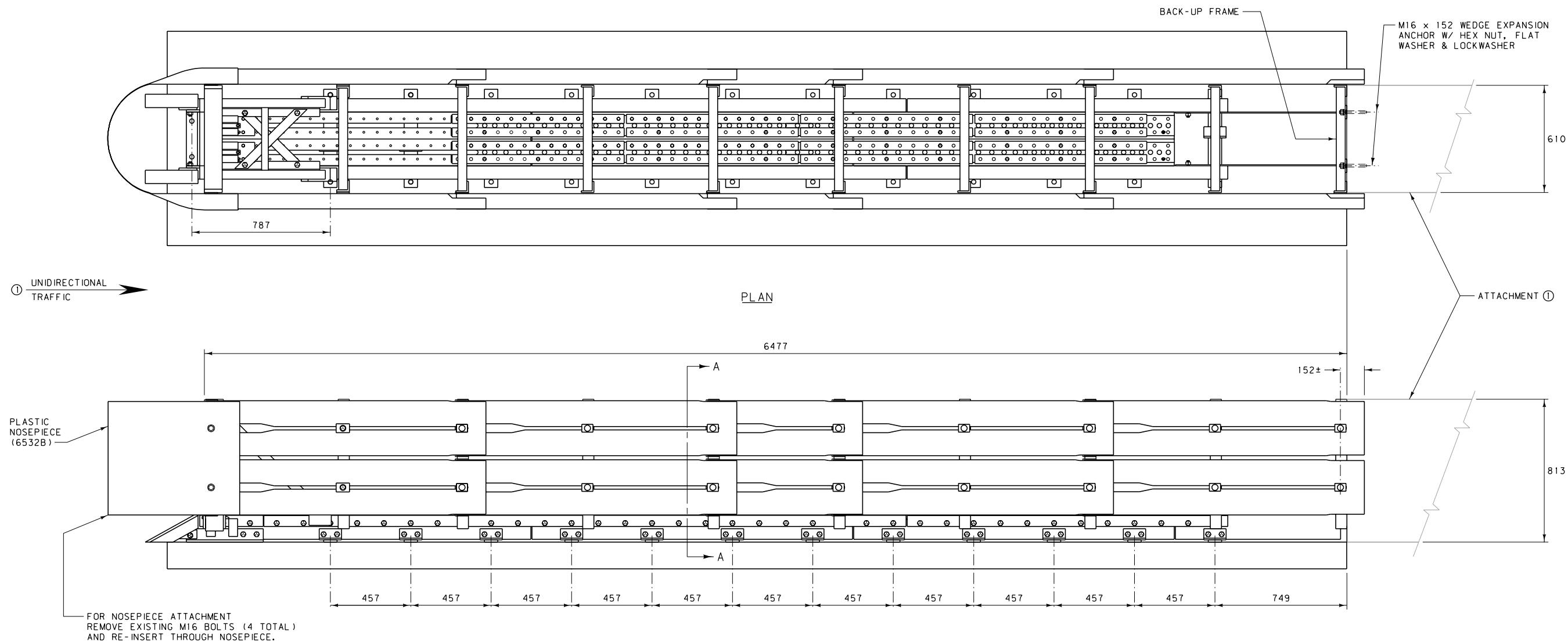
DETAIL K  
(AT POST P1)

NOTES:

- USE THE SKT 350 TERMINAL SECTION ON DIVIDED ROADWAYS IF THE WIDTH IS 7.5 m OR GREATER BETWEEN FINISHED SURFACES. CONSIDER OTHER TERMINAL SECTIONS IF THE WIDTH IS LESS THAN 7.5 m BETWEEN FINISHED SURFACES.
- FLARE THE END SECTION AWAY FROM TRAFFIC AT A RATE OF 50:1 FOR 15.24 m (ILLUSTRATED). FLARES OF 50:1 FOR 30.48 m MAY ALSO BE USED. THE FLARE MAY BE OMITTED ON ROADS WITH SHOULDERS GREATER THAN 0.6 m IN WIDTH.
- PLACE A SELF-ADHESIVE OBJECT MARKER ON THE GUARDRAIL IMPACT HEAD FACE, HAVING ALTERNATING RETRO-REFLECTIVE BLACK AND YELLOW STRIPES SLOPED DOWNWARD AT AN ANGLE OF 45° TOWARDS THE SIDE ON WHICH TRAFFIC IS TO PASS.
- ATTACH REFLECTORS TO TERMINAL SECTION POSTS, PER DTL. DWG. NO. 606-05A & 606-05B.
- AFTER FINAL ASSEMBLY, RECHECK CABLE TO MAKE SURE IT IS TAUT AND HAS NOT RELAXED.
- OBTAIN ENGINEER'S APPROVAL OF MANUFACTURER INSTALLATION OPTIONS WHEN SITE CONDITIONS PREVENT THE USE OF THE OPTION SHOWN ON THIS DETAIL.
- LAP ALL W-BEAM SPLICES IN THE DIRECTION OF ADJACENT TRAFFIC.

ALL DIMENSIONS ARE MILLIMETERS  
(mm) UNLESS OTHERWISE NOTED.

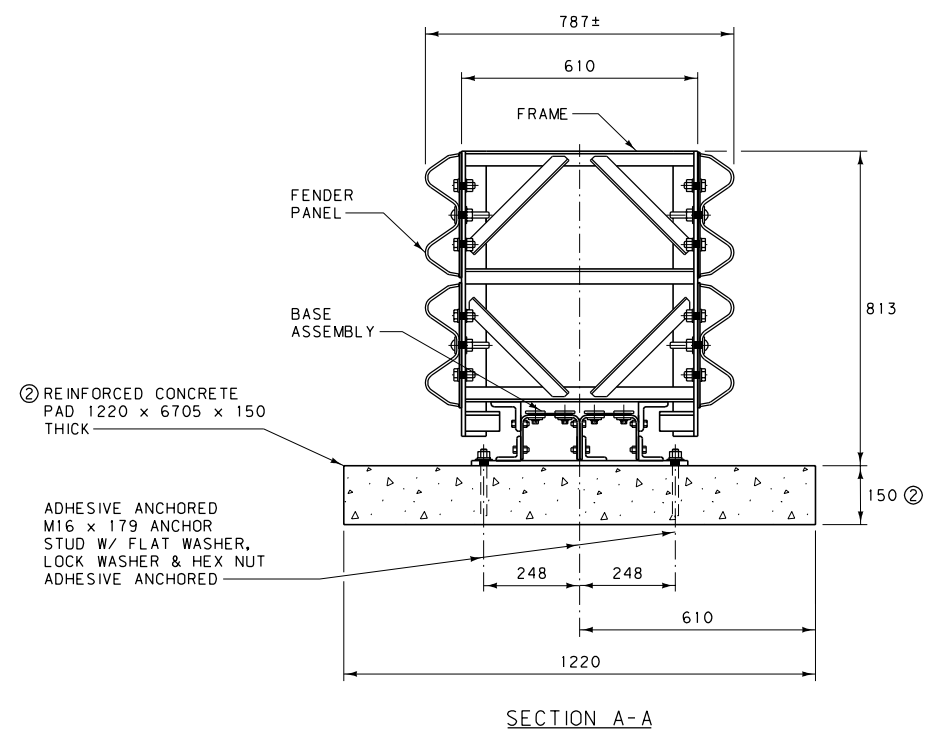
| DETAILED DRAWING   |                                      |
|--|--------------------------------------|
| REFERENCE STANDARD SPEC. SECTION 606   | DWG. NO. 606-13B                     |
| OPTIONAL TERMINAL SECTION - SKT 350  |                                      |
| EFFECTIVE: APRIL 2006  |                                      |
|  serving you with pride | MONTANA DEPARTMENT OF TRANSPORTATION |



ELEVATION

| TRACC BILL OF MATERIAL               |     |                                 |
|--------------------------------------|-----|---------------------------------|
| PART NUMBER                          | QTY | DESCRIPTION                     |
| * 25980A                             | 1   | TRACC UNIT (FULLY ASSEMBLED **) |
| 3310G                                | 4   | M16 LOCKWASHER                  |
| 4451G                                | 4   | M16 x 152 WEDGE EXP. ANCHOR     |
| 6825B                                | 4   | REFLECTIVE TAPE                 |
| 6532B                                | 1   | PLASTIC NOSEPIECE               |
| ANCHOR HARDWARE (FULL CONCRETE BASE) |     |                                 |
| 5204G                                | 26  | M16 x 179 ANCHOR STUD           |
| 3310G                                | 26  | M16 LOCKWASHER                  |
| 3361G                                | 26  | M16 HEX NUT                     |
| 3300G                                | 26  | M16 FLAT WASHER                 |
| 5206B                                | 3   | ADHESIVE HIT HY 150 (CARTRIDGE) |
| ANCHOR HARDWARE (ASPHALT BASE)       |     |                                 |
| 6380G                                | 26  | M16 x 457 ALL THREADED ROD      |
| 3310G                                | 26  | M16 LOCKWASHER                  |
| 3361G                                | 26  | M16 HEX NUT                     |
| 3300G                                | 26  | M16 FLAT WASHER                 |
| 5206B                                | 5   | ADHESIVE HIT HY 150 (CARTRIDGE) |

\* SEE DET. DWG. NO. 606-31B  
 \*\* EACH UNIT SHIPS 100% ASSEMBLED  
 (PLASTIC NOSE INSTALLED AFTER PLACEMENT)




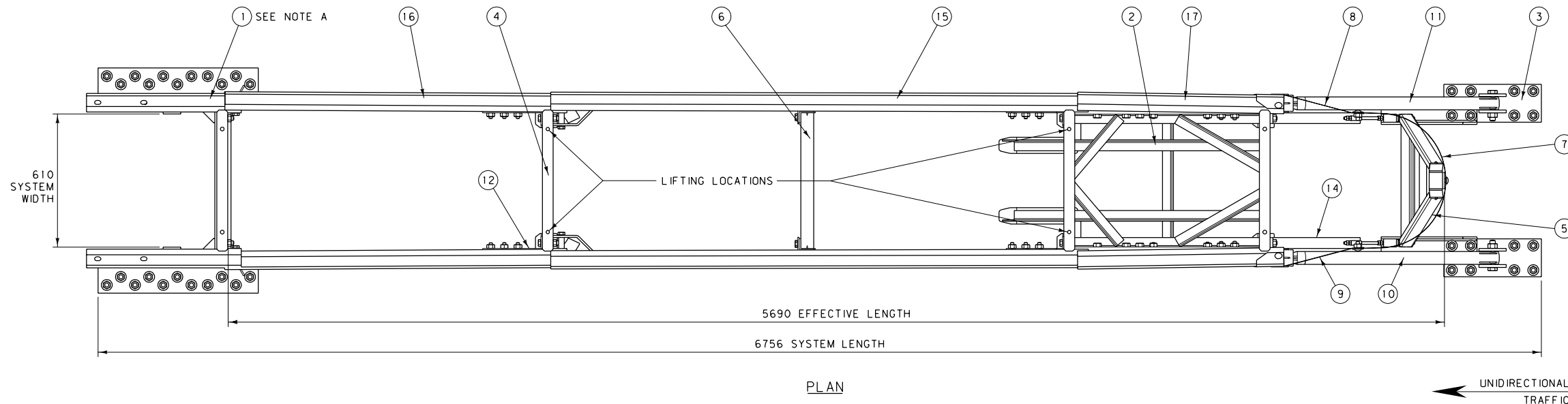
SECTION A-A

NOTES:

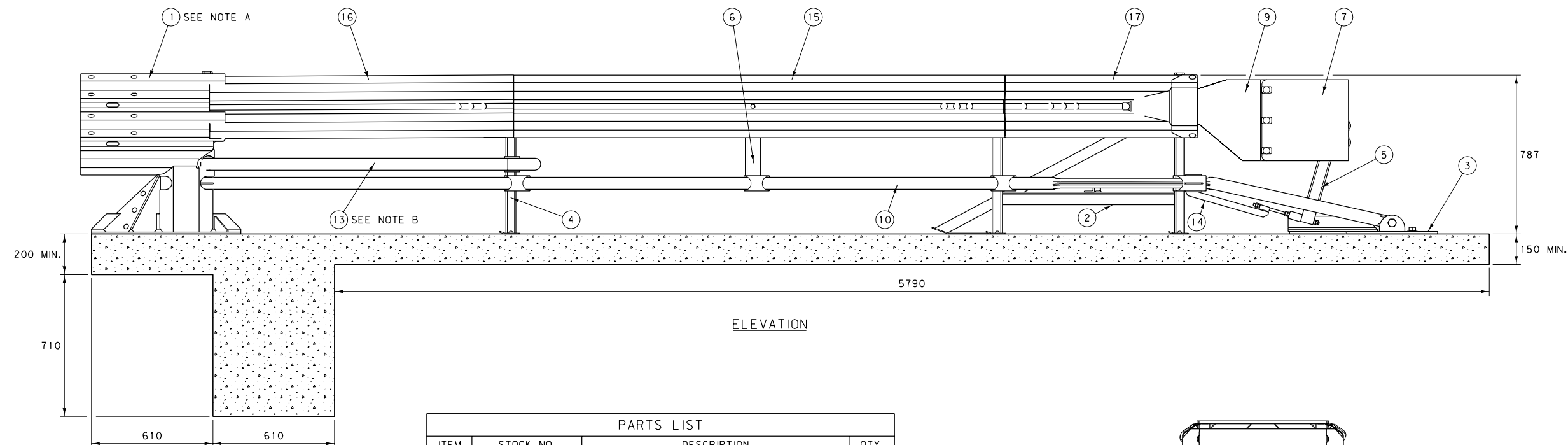
- ① ATTACHMENT SHOWN IS TO SHAPES WITH RECTANGULAR CROSS SECTIONS SUCH AS: PIERS, PARAPETS, AND MODIFIED CONCRETE BARRIER RAIL. TRAFFIC FLOW IS UNIDIRECTIONAL. ATTACHMENTS AND TRANSITIONS TO OTHER SHAPES, BARRIERS, RAILINGS AND BIDIRECTIONAL TRAFFIC FLOWS ARE AVAILABLE FROM THE MANUFACTURER.
- ② A 150 mm REINFORCED CONCRETE PAD IS SHOWN. OTHER FOUNDATION OPTIONS ARE:
  - a) 200 mm THICK UNREINFORCED CONCRETE
  - b) 200 mm THICK ASPHALT
  - c) 75 mm THICK ASPHALT OVER 75 mm THICK CONCRETE
  - d) 150 mm THICK ASPHALT OVER 150 mm THICK COMPACTED SUBBASE
- REINFORCEMENT DRAWINGS FOR THE REINFORCED CONCRETE PAD SHOWN ARE AVAILABLE FROM THE MANUFACTURER.
- ③ SEE MANUFACTURER FOR MORE INFORMATION ON SPECIFIC DESIGNS, PRODUCT OPTIONS, INSTALLATION AND MAINTENANCE OF THE TRACC SYSTEM.

ALL DIMENSIONS ARE MILLIMETERS  
 (mm) UNLESS OTHERWISE NOTED.

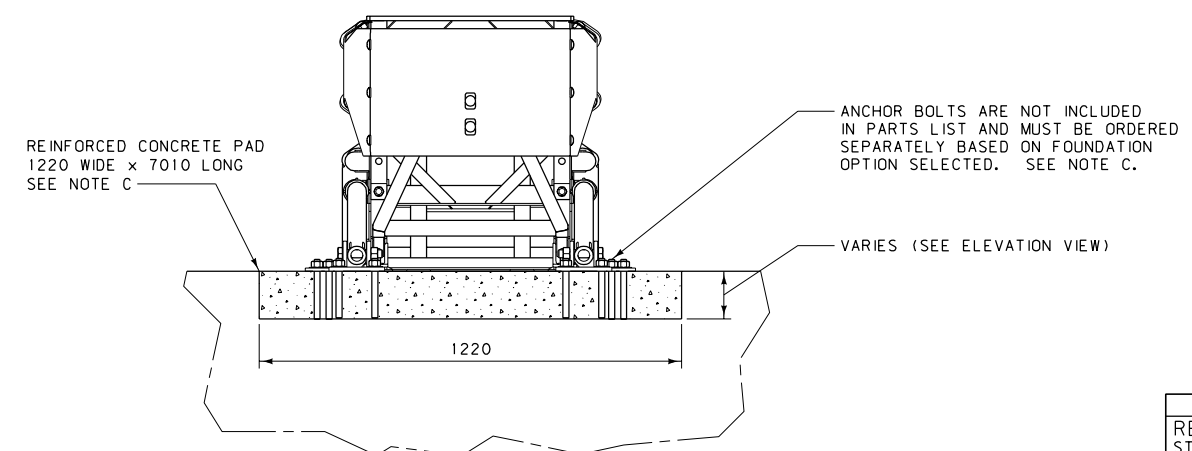
| DETAILED DRAWING   |                  |
|--|------------------|
| REFERENCE STANDARD SPEC. SECTION 606   | DWG. NO. 606-30B |
| IMPACT ATTENUATOR - TRACC  |                  |
| EFFECTIVE: APRIL 2006  |                  |
|  MONTANA DEPARTMENT OF TRANSPORTATION |                  |




- NOTES:
- Ⓐ ATTACHMENT SHOWN IS TO SHAPES WITH RECTANGULAR CROSS SECTIONS SUCH AS: PIERS, PARAPETS, AND MODIFIED CONCRETE BARRIER RAIL. TRAFFIC FLOW IS UNIDIRECTIONAL. ATTACHMENTS AND TRANSITIONS TO OTHER SHAPES, BARRIERS, RAILINGS AND BIDIRECTIONAL TRAFFIC FLOWS ARE AVAILABLE FROM THE MANUFACTURER.
- Ⓑ PROVIDE ADEQUATE CLEARANCE (1.5 m MIN.) TO ALLOW REAR RAILS TO SLIDE REARWARD UPON IMPACT.
- Ⓒ A 150 mm REINFORCED CONCRETE PAD IS SHOWN. OTHER FOUNDATION OPTIONS ARE:
- a) 200 mm THICK UNREINFORCED CONCRETE
  - b) 200 mm THICK ASPHALT
  - c) 75 mm THICK ASPHALT OVER 75 mm THICK CONCRETE
  - d) 150 mm THICK ASPHALT OVER 150 mm THICK COMPACTED SUBBASE
  - e) 180 mm THICK REINFORCED DECK STRUCTURE
- SEE MANUFACTURER FOR REINFORCEMENT DRAWINGS AND ANCHORAGE REQUIREMENTS FOR ALL FOUNDATION OPTIONS.
- Ⓓ SEE MANUFACTURER FOR MORE INFORMATION ON SPECIFIC DESIGNS, INSTALLATION AND MAINTENANCE OF THE QUEST SYSTEM.

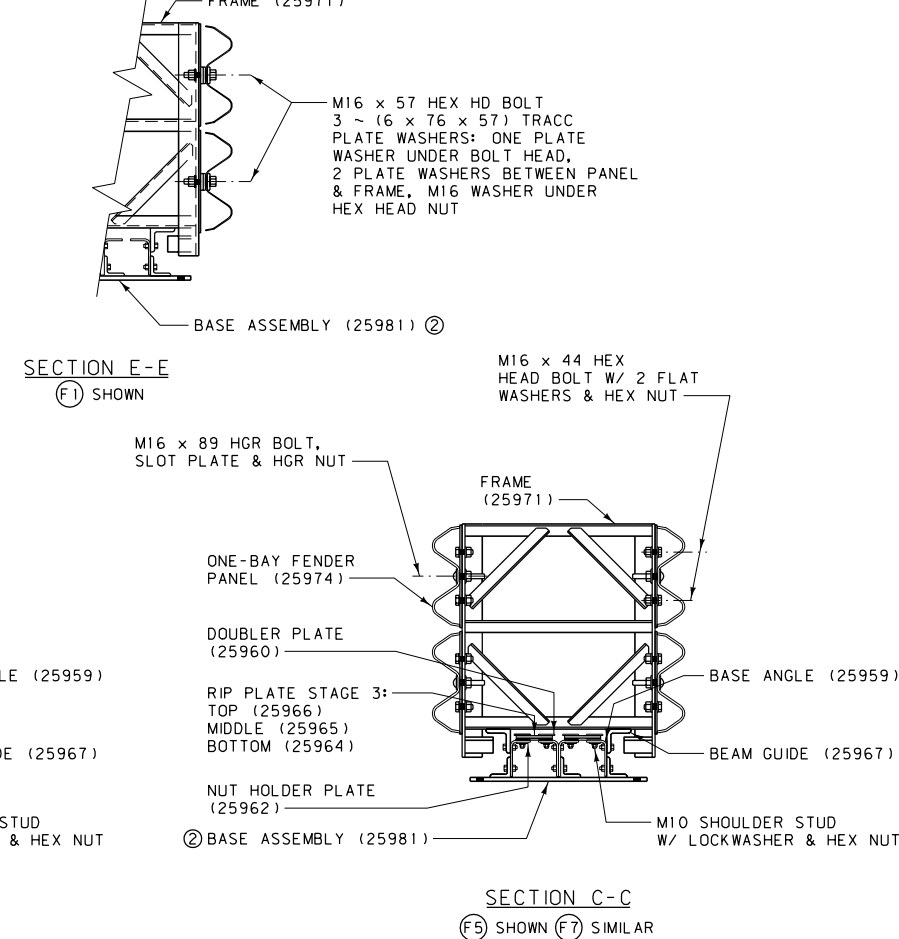


| PARTS LIST |              |                                      |      |
|------------|--------------|--------------------------------------|------|
| ITEM       | STOCK NO.    | DESCRIPTION                          | QTY. |
| 1          | 3562003-0000 | BACKUP ASSEMBLY, 24, QUEST           | 1    |
| 2          | 3562002-0000 | SUPPORT FRAME ASSY, BAY 1, 24, QUEST | 1    |
| 3          | 2762015-0000 | ANCHOR, FRONT, QUEST, G              | 2    |
| 4          | 3562005-0000 | DIAPHRAGM ASSEMBLY, 24, BAY 3, QUEST | 1    |
| 5          | 3562001-0000 | TRIGGER ASSEMBLY, QUEST              | 1    |
| 6          | 3562004-0000 | BRIDGE, 24, BAY 2, QUEST             | 1    |
| 7          | 2762026-0000 | NOSE, QUEST, G                       | 1    |
| 8          | 2762024-0000 | NOSE TRANSITION, R, QUEST, G         | 1    |
| 9          | 2762025-0000 | NOSE TRANSITION, L, QUEST, G         | 1    |
| 10         | 276200L-0000 | SHAPER RAIL, L, QUEST, G             | 1    |
| 11         | 276200R-0000 | SHAPER RAIL, R, QUEST, G             | 1    |
| 12         | 2762022-0000 | BRACKET, PANEL, DIAPHRAGM, G         | 2    |
| 13         | 2762023-0000 | REAR RAIL, QUEST, G                  | 2    |
| 14         | 2762007-0000 | TRIGGER STRAP, QUEST, G              | 2    |
| 15         | 2762013-0000 | PANEL, BAY 2, QUEST, G               | 2    |
| 16         | 2762014-0000 | PANEL, BAY 3, QUEST, G               | 2    |
| 17         | 2762033-0000 | PANEL, BAY 1, QUEST, G               | 2    |



ALL DIMENSIONS ARE MILLIMETERS  
(mm) UNLESS OTHERWISE NOTED.


| DETAILED DRAWING   |                                      |
|--|--------------------------------------|
| REFERENCE STANDARD SPEC. SECTION 606   | DWG. NO. 606-30C                     |
| IMPACT ATTENUATOR - QUEST  |                                      |
| EFFECTIVE: APRIL 2006  |                                      |
|  serving you with pride | MONTANA DEPARTMENT OF TRANSPORTATION |

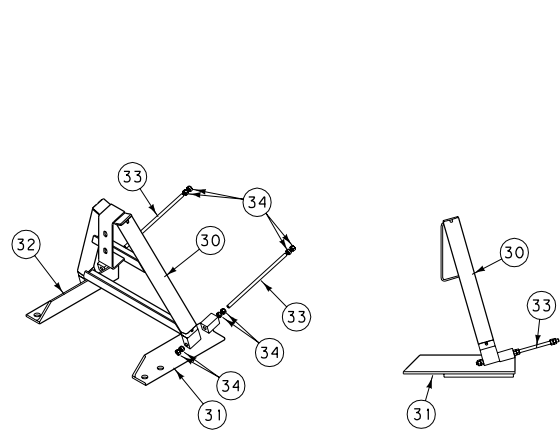
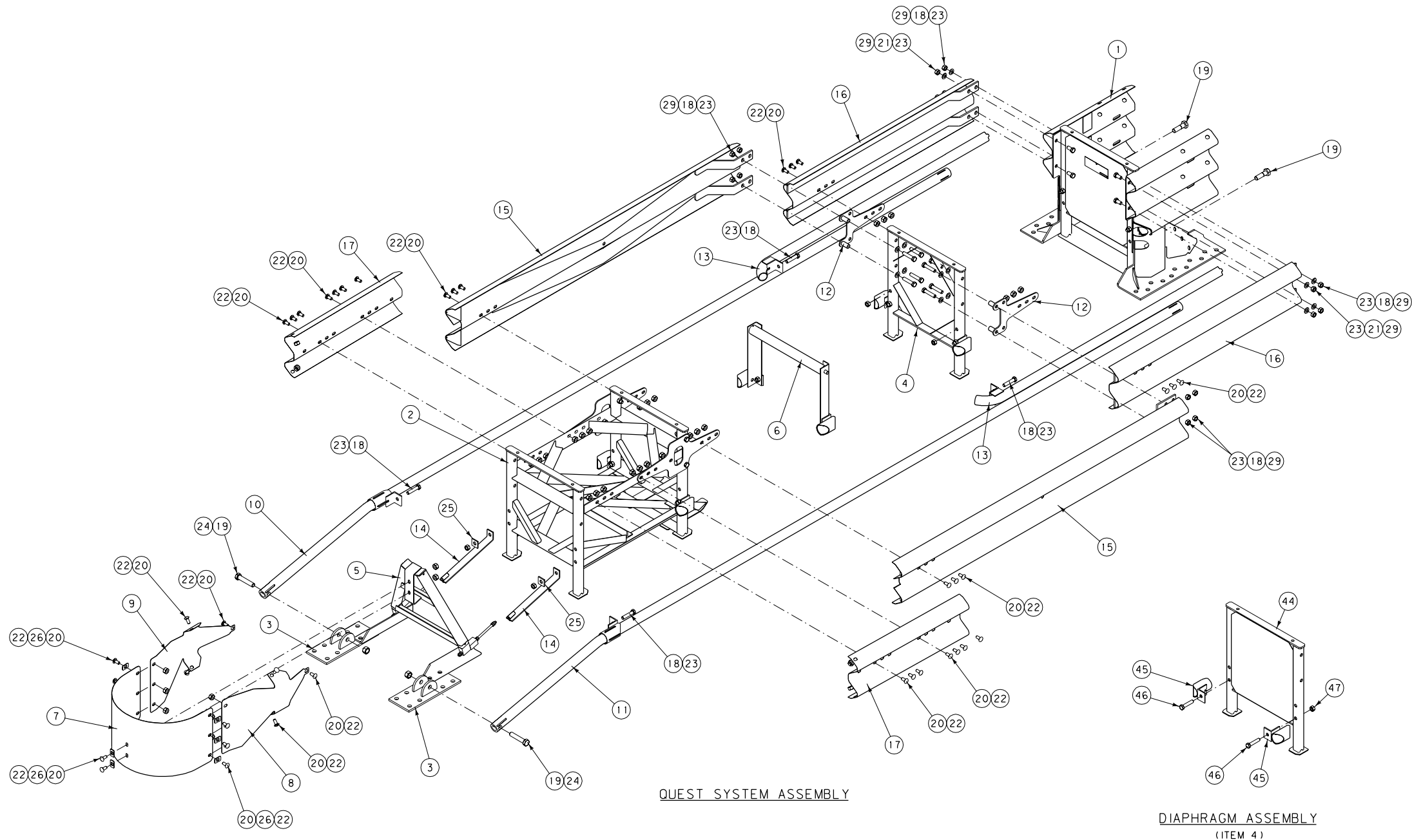


NOTES:

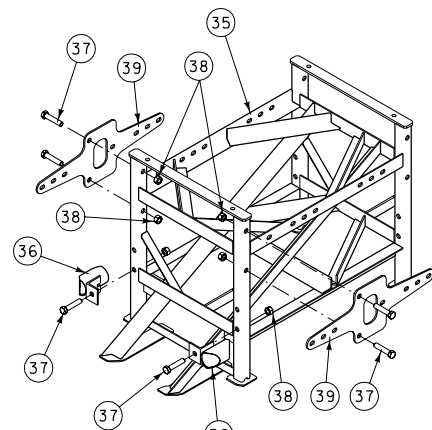
- ① SHIPPING PLATES MAINTAIN SLED POSITION DURING SHIPPING. IT IS NOT NECESSARY TO REMOVE SHIPPING PLATES AFTER INSTALLATION OR REPLACE AFTER REPAIRING DAMAGE TO TRACC UNIT.
- ② SEE MANUFACTURER FOR ADDITIONAL DETAILS AND DRAWINGS SHOWING COMPLETE ASSEMBLY OF ALL BASE COMPONENTS.

ALL DIMENSIONS ARE MILLIMETERS  
(mm) UNLESS OTHERWISE NOTED.

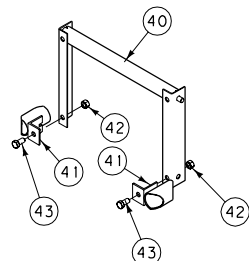
|  |   |
|--|---|
| DETAILED DRAWING   |   |
| REFERENCE  | DWG. NO.  |
| STANDARD SPEC.   | 606-31B   |
| SECTION 606  |   |
| IMPACT ATTENUATOR -<br>TRACC<br>ASSEMBLY DETAILS   |   |
| EFFECTIVE: APRIL 2006  |   |
| <br><i>serving you with pride</i> | <b>MONTANA DEPARTMENT<br/>OF TRANSPORTATION</b> |



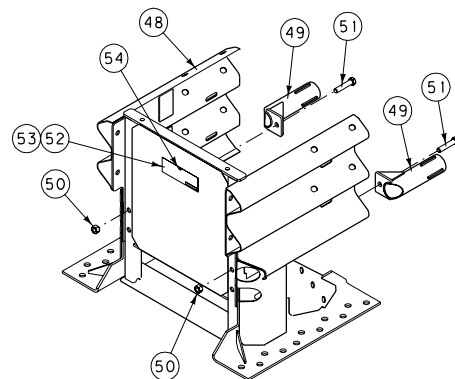
TRIGGER ASSEMBLY  
(ITEM 5)



SUPPORT FRAME ASSEMBLY  
(ITEM 2)




BRIDGE  
(ITEM 6)

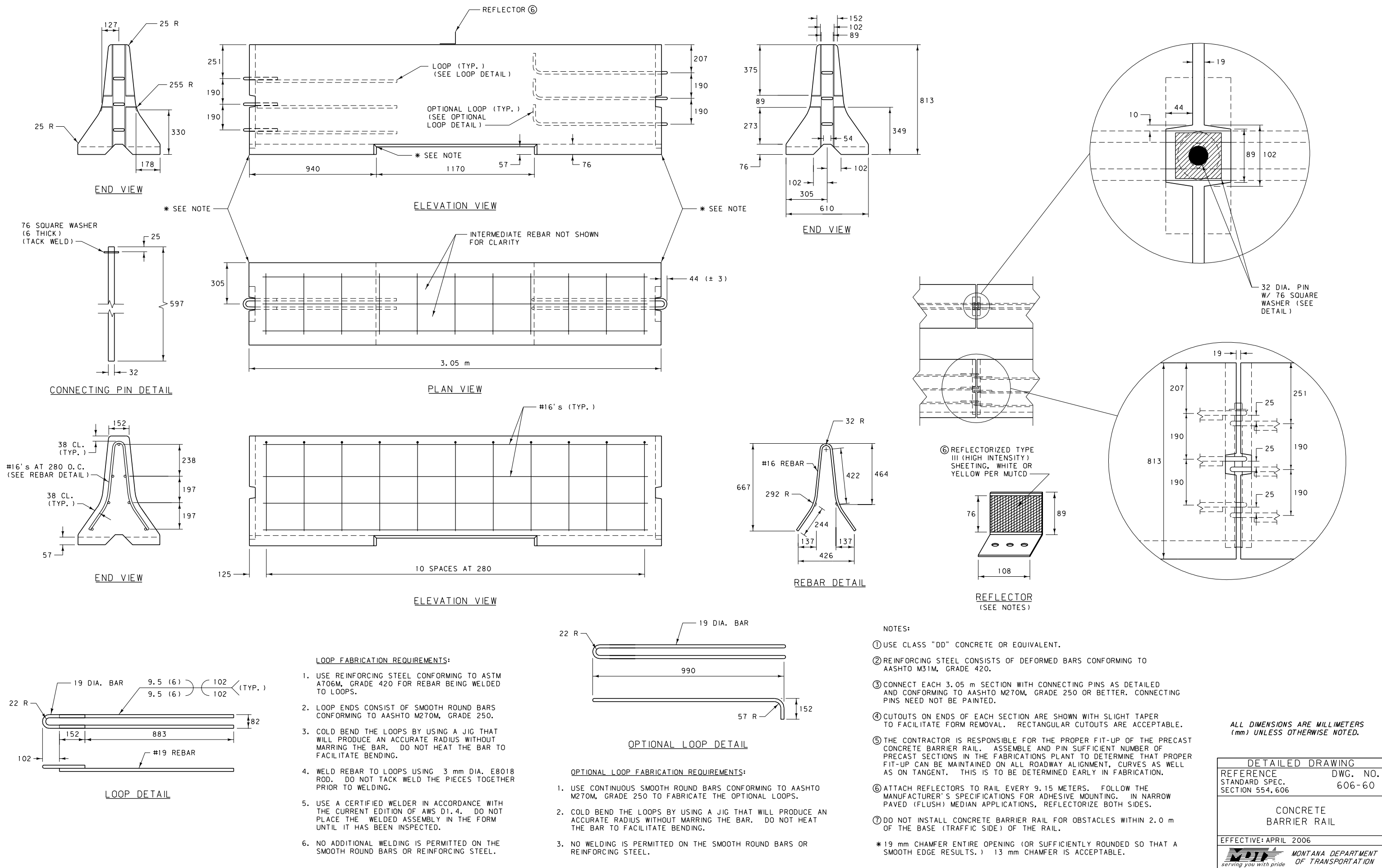


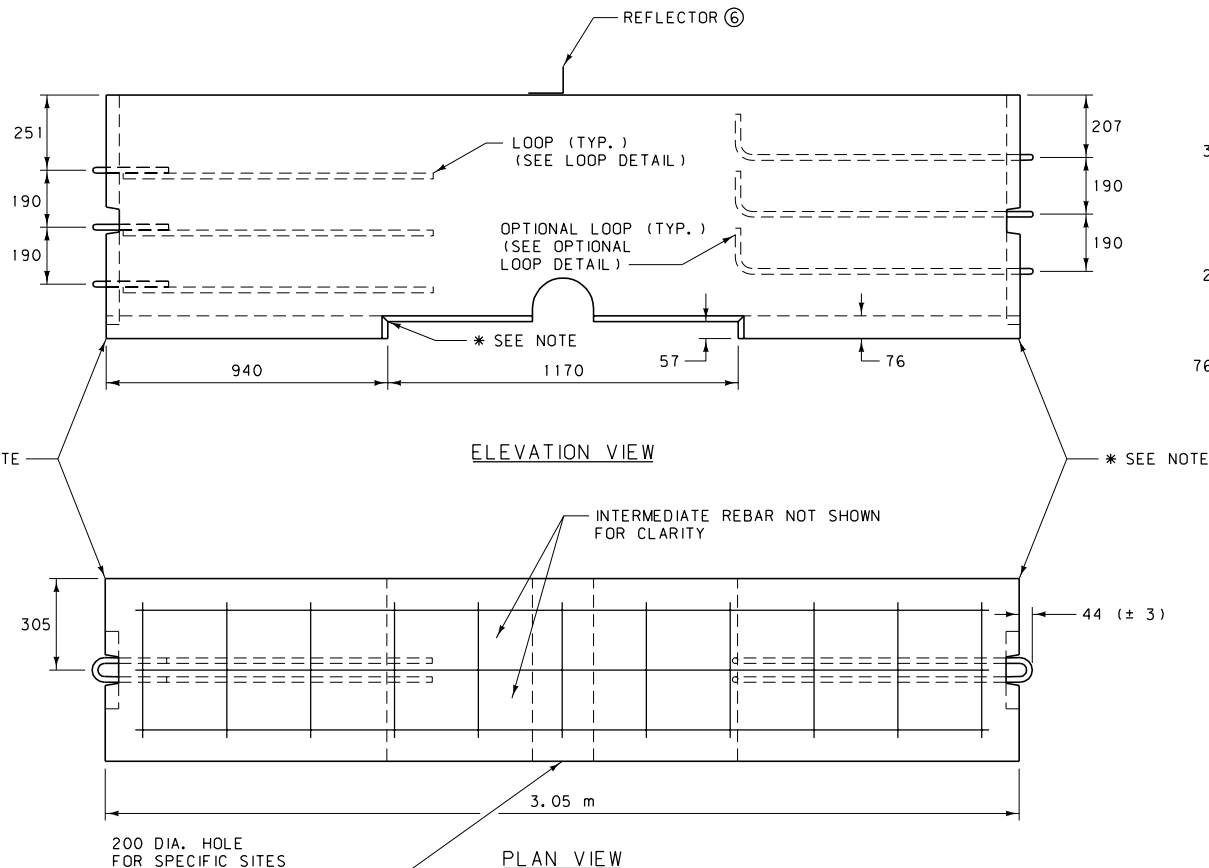
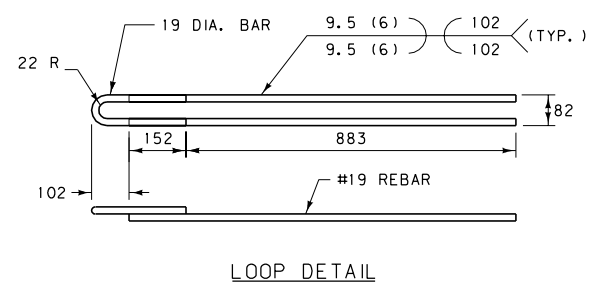
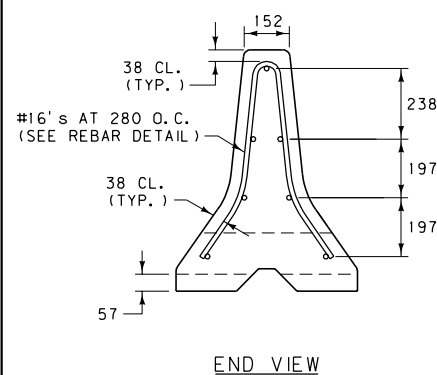
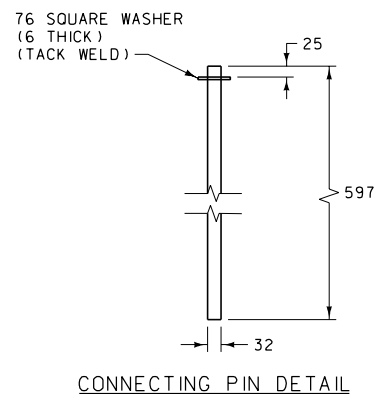
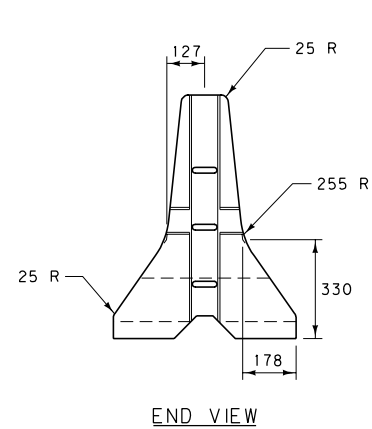
BACKUP ASSEMBLY  
(ITEM 1)

| PARTS LIST                      |              |  |      |
|---------------------------------|--------------|--|------|
| ITEM                            | STOCK NO.    | DESCRIPTION                            | QTY. |
| 1                               | 3562003-0000 | BACKUP ASSEMBLY, 24, QUEST             | 1    |
| 2                               | 3562002-0000 | SUPPORT FRAME ASSY, BAY 1, 24, QUEST   | 1    |
| 3                               | 2762015-0000 | ANCHOR, FRONT, QUEST, G                | 2    |
| 4                               | 3562005-0000 | DIAPHRAGM ASSEMBLY, 24, BAY 3, QUEST   | 1    |
| 5                               | 3562001-0000 | TRIGGER ASSEMBLY, QUEST                | 1    |
| 6                               | 3562004-0000 | BRIDGE ASSEMBLY, 24, BAY 2, QUEST      | 1    |
| 7                               | 2762026-0000 | NOSE, QUEST, G                         | 1    |
| 8                               | 2762024-0000 | NOSE TRANSITION, R, QUEST, G           | 1    |
| 9                               | 2762025-0000 | NOSE TRANSITION, L, QUEST, G           | 1    |
| 10                              | 276200L-0000 | SHAPER RAIL, L, QUEST, G               | 1    |
| 11                              | 276200R-0000 | SHAPER RAIL, R, QUEST, G               | 1    |
| 12                              | 2762022-0000 | BRACKET, PANEL, DIAPHRAGM, G           | 2    |
| 13                              | 2762023-0000 | REAR RAIL, QUEST, G                    | 2    |
| 14                              | 2762007-0000 | TRIGGER STRAP, QUEST, G                | 2    |
| 15                              | 2762013-0000 | PANEL, BAY 2, QUEST, G                 | 2    |
| 16                              | 2762014-0000 | PANEL, BAY 3, QUEST, G                 | 2    |
| 17                              | 2762033-0000 | PANEL, BAY 1, QUEST, G                 | 2    |
| 18                              | 2699251-0000 | BOLT, HX, M20 x 89, G5, G              | 16   |
| 19                              | 2701014-0000 | BOLT, HX, M24 x 127, G8, G             | 4    |
| 20                              | 2701811-0000 | BOLT, RAIL, M16 x 32, G5, G            | 40   |
| 21                              | 2701931-0000 | BOLT, HX, M20 x 38, G5, G              | 4    |
| 22                              | 2704191-0000 | NUT, HX, M16, G, RAIL                  | 40   |
| 23                              | 2704091-0000 | NUT, HX, M20, G                        | 20   |
| 24                              | 2704161-0000 | NUT, HX, M24, G                        | 2    |
| 25                              | 2708161-0000 | WASHER, BAR, 51 x 51 x 6, G            | 2    |
| 26                              | 2708871-1000 | WASHER, BAR, 32 x 51 x 3, ROUNDED, G   | 8    |
| 27                              | 2700031-0000 | INSTALL INSTRUCTIONS, QUEST            | 1    |
| 28                              | 2735831-3500 | MATERIAL SAFETY INFO NOTICE            | 1    |
| 29                              | 2708081-0000 | WASHER, FLAT, M20 (51 O.D.), HVY, G    | 16   |
| TRIGGER ASSEMBLY (ITEM 5)       |              |  |      |
| 30                              | 2762008-0000 | TRIGGER FRAME, QUEST, G                | 1    |
| 31                              | 2762011-0000 | ANCHOR, TRIGGER, R, QUEST, G           | 1    |
| 32                              | 2762012-0000 | ANCHOR, TRIGGER, L, QUEST, G           | 1    |
| 33                              | 2699034-0000 | ROD, THREADED, 13 DIA. x 343, B7, G    | 2    |
| 34                              | 2704911-0000 | NUT, HX, M12, G5, G                    | 12   |
| SUPPORT FRAME ASSEMBLY (ITEM 2) |              |  |      |
| 35                              | 2762010-0000 | SUPPORT FRAME, BAY 1, 24, QUEST, G     | 1    |
| 36                              | 2762003-0000 | RAIL GUIDE, DIAPHRAGM, QUEST, G        | 2    |
| 37                              | 2699251-0000 | BOLT, HX, M20 x 89, G5, G              | 6    |
| 38                              | 2704091-0000 | NUT, HX, M20, G                        | 6    |
| 39                              | 2762021-0000 | BRACKET, PANEL, BAY 1 FRAME, QUEST, G  | 2    |
| BRIDGE (ITEM 6)                 |              |  |      |
| 40                              | 2762016-0000 | BRIDGE, 24, QUEST, G                   | 1    |
| 41                              | 2762003-0000 | RAIL GUIDE, DIAPHRAGM, QUEST, G        | 2    |
| 42                              | 2704091-0000 | NUT, HX, M20, G                        | 2    |
| 43                              | 2701931-0000 | BOLT, HX, M20 x 38, G5, G              | 2    |
| DIAPHRAGM ASSEMBLY (ITEM 4)     |              |  |      |
| 44                              | 2762018-0000 | DIAPHRAGM, 24, BAY 3, QUEST, G         | 1    |
| 45                              | 2762003-0000 | RAIL GUIDE, DIAPHRAGM, QUEST, G        | 2    |
| 46                              | 2699251-0000 | BOLT, HX, M20 x 89, G5, G              | 2    |
| 47                              | 2704091-0000 | NUT, HX, M20, G                        | 2    |
| BACKUP ASSEMBLY (ITEM 1)        |              |  |      |
| 48                              | 2762020-0000 | BACKUP, 24, QUEST, G                   | 1    |
| 49                              | 2762017-0000 | SHAPER, BACKUP, QUEST, G               | 2    |
| 50                              | 2704091-0000 | NUT, HX, M20, G                        | 2    |
| 51                              | 2699251-0000 | BOLT, HX, M20 x 89, G5, G              | 2    |
| 52                              | 2735711-0000 | DECAL, CAUTION, ALL PRODUCTS           | 1    |
| 53                              | 2735712-3500 | DECAL, PRODUCT, QUEST                  | 1    |
| 54                              | 2705121-0000 | RIVET, ST, SD68BS, 4.8 DIA. x 12.7, DH | 1    |

ALL DIMENSIONS ARE MILLIMETERS  
(mm) UNLESS OTHERWISE NOTED.

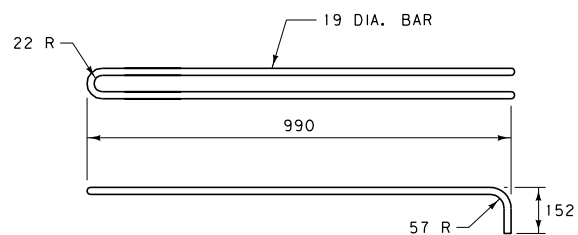
| DETAILED DRAWING  |                     |
|---|---------------------|
| REFERENCE<br>STANDARD SPEC.<br>SECTION 606  | DWG. NO.<br>606-31C |
| IMPACT ATTENUATOR -<br>QUEST<br>ASSEMBLY DETAILS  |                     |
| EFFECTIVE: APRIL 2006   |                     |
|  MONTANA DEPARTMENT<br>OF TRANSPORTATION |                     |





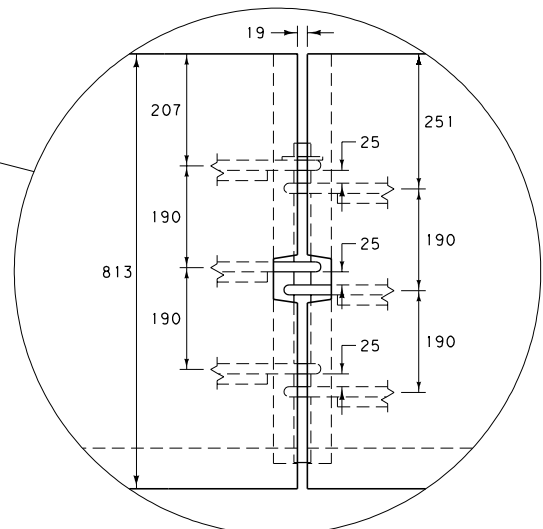
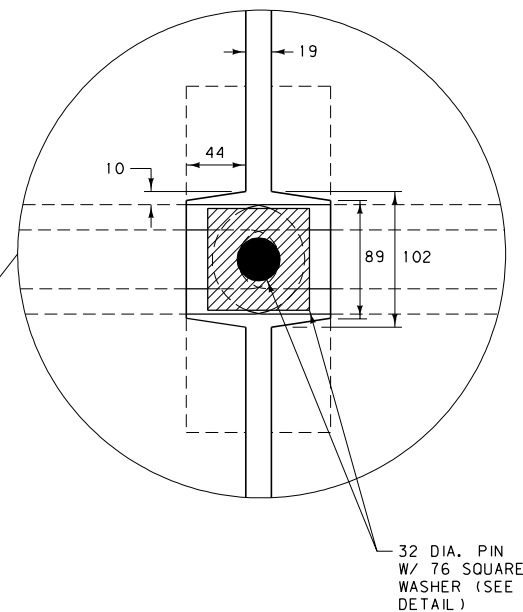
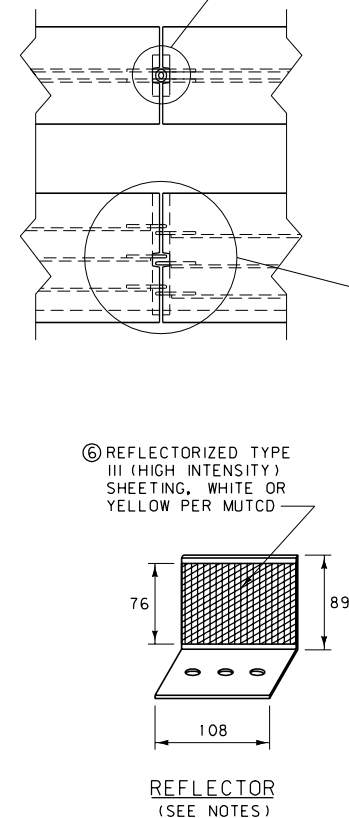
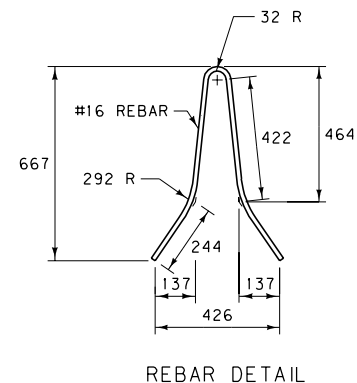
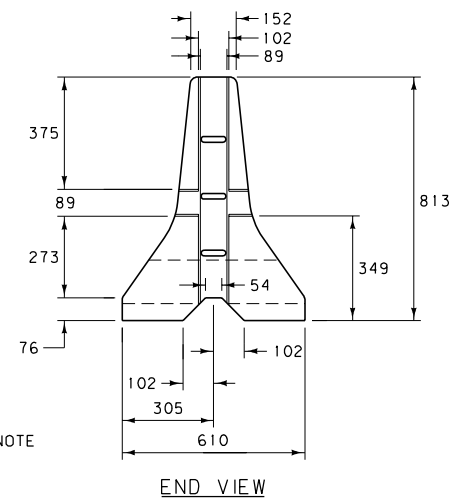
#### LOOP FABRICATION REQUIREMENTS:

1. USE REINFORCING STEEL CONFORMING TO ASTM A706M, GRADE 420 FOR REBAR BEING WELDED TO LOOPS.
2. LOOP ENDS CONSIST OF SMOOTH ROUND BARS CONFORMING TO AASHTO M270M, GRADE 250.
3. COLD BEND THE LOOPS BY USING A JIG THAT WILL PRODUCE AN ACCURATE RADIUS WITHOUT MARRING THE BAR. DO NOT HEAT THE BAR TO FACILITATE BENDING.
4. WELD REBAR TO LOOPS USING 3 mm DIA. E8018 ROD. DO NOT TACK WELD THE PIECES TOGETHER PRIOR TO WELDING.
5. USE A CERTIFIED WELDER IN ACCORDANCE WITH THE CURRENT EDITION OF AWS D1.4. DO NOT PLACE THE WELDED ASSEMBLY IN THE FORM UNTIL IT HAS BEEN INSPECTED.
6. NO ADDITIONAL WELDING IS PERMITTED ON THE SMOOTH ROUND BARS OR REINFORCING STEEL.



#### OPTIONAL LOOP FABRICATION REQUIREMENTS:

1. USE CONTINUOUS SMOOTH ROUND BARS CONFORMING TO AASHTO M270M, GRADE 250 TO FABRICATE THE OPTIONAL LOOPS.
2. COLD BEND THE LOOPS BY USING A JIG THAT WILL PRODUCE AN ACCURATE RADIUS WITHOUT MARRING THE BAR. DO NOT HEAT THE BAR TO FACILITATE BENDING.
3. NO WELDING IS PERMITTED ON THE SMOOTH ROUND BARS OR REINFORCING STEEL.




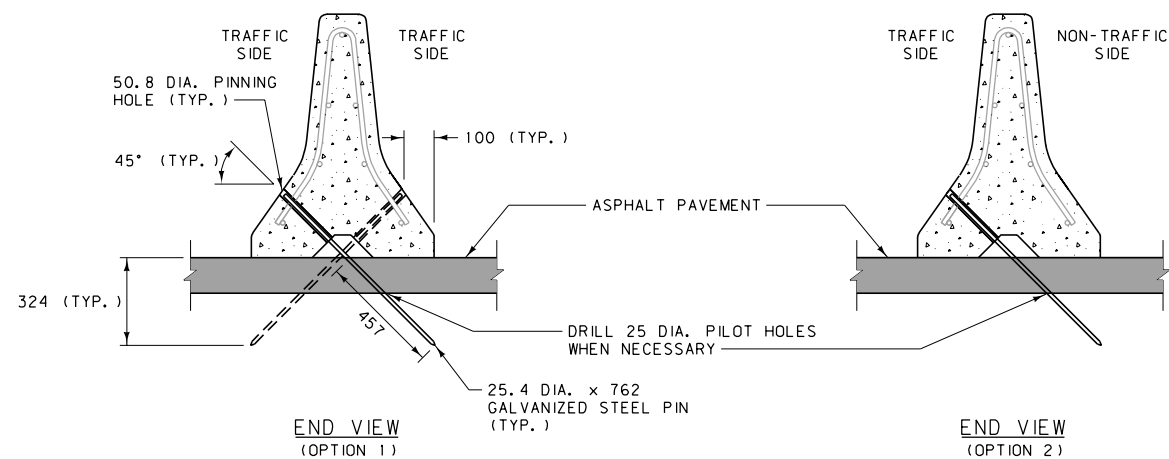
#### NOTES:

- ① USE CLASS "DD" CONCRETE OR EQUIVALENT.
  - ② REINFORCING STEEL CONSISTS OF DEFORMED BARS CONFORMING TO AASHTO M31M, GRADE 420.
  - ③ CONNECT EACH 3.05 m SECTION WITH CONNECTING PINS AS DETAILED AND CONFORMING TO AASHTO M270M, GRADE 250 OR BETTER. CONNECTING PINS NEED NOT BE PAINTED.
  - ④ CUTOUTS ON ENDS OF EACH SECTION ARE SHOWN WITH SLIGHT TAPER TO FACILITATE FORM REMOVAL. RECTANGULAR CUTOUTS ARE ACCEPTABLE.
  - ⑤ THE CONTRACTOR IS RESPONSIBLE FOR THE PROPER FIT-UP OF THE PRECAST CONCRETE BARRIER RAIL. ASSEMBLE AND PIN SUFFICIENT NUMBER OF PRECAST SECTIONS IN THE FABRICATIONS PLANT TO DETERMINE THAT PROPER FIT-UP CAN BE MAINTAINED ON ALL ROADWAY ALIGNMENT, CURVES AS WELL AS ON TANGENT. THIS IS TO BE DETERMINED EARLY IN FABRICATION.
  - ⑥ ATTACH REFLECTORS TO RAIL EVERY 9.15 METERS. FOLLOW THE MANUFACTURER'S SPECIFICATIONS FOR ADHESIVE MOUNTING. IN NARROW PAVED (FLUSH) MEDIAN APPLICATIONS, REFLECTORIZE BOTH SIDES.
  - ⑦ DO NOT INSTALL ALTERNATE CONCRETE BARRIER RAIL FOR OBSTACLES WITHIN 2.0 m OF THE BASE (TRAFFIC SIDE) OF THE RAIL.
- \* 19 mm CHAMFER ENTIRE OPENING (OR SUFFICIENTLY ROUNDED SO THAT A SMOOTH EDGE RESULTS.) 13 mm CHAMFER IS ACCEPTABLE.

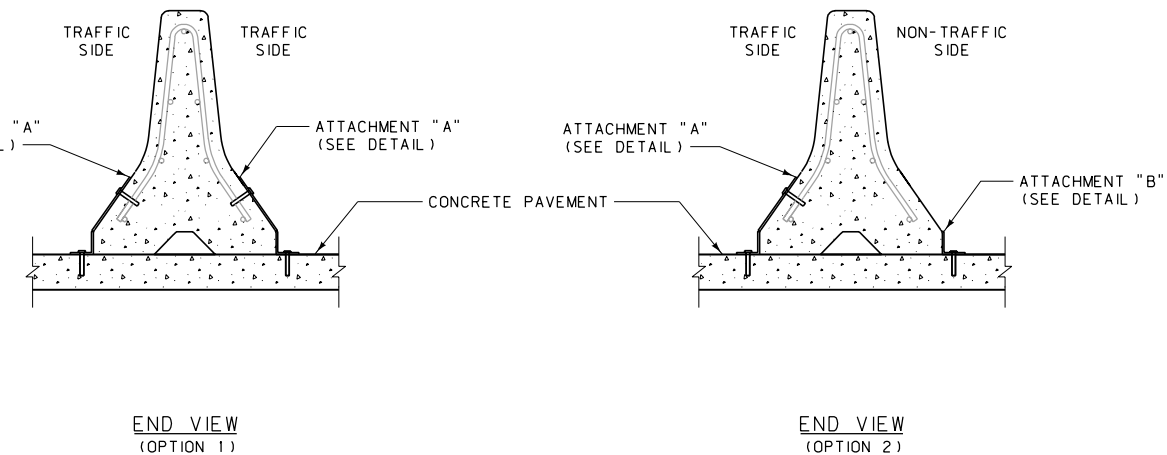
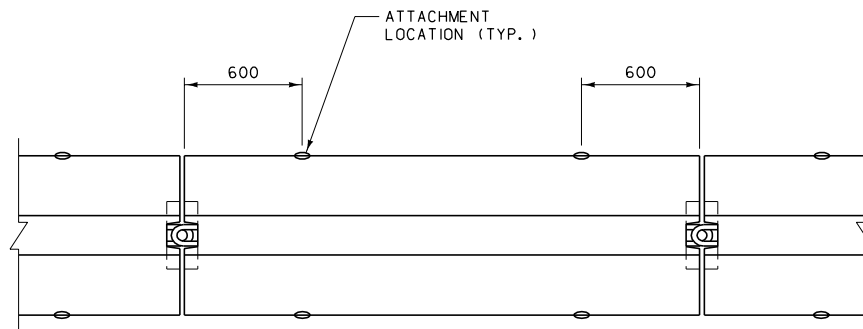
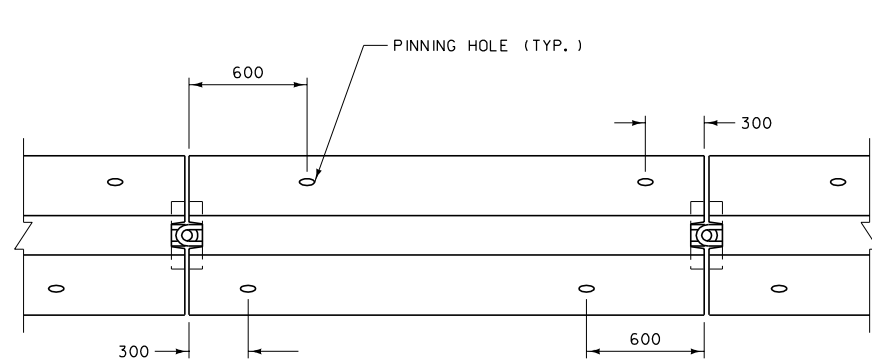
\*\* USE THIS RAIL ON A CASE-BY-CASE BASIS AS SPECIFIED IN THE PLANS.

ALL DIMENSIONS ARE MILLIMETERS  
(mm) UNLESS OTHERWISE NOTED.

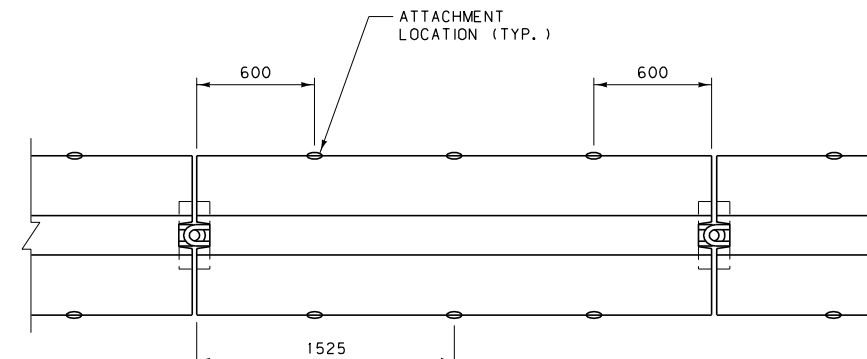
| DETAILED DRAWING   |                                      |
|--|--------------------------------------|
| REFERENCE STANDARD SPEC. SECTION 554.606   | DWG. NO. 606-61                      |
| ALTERNATE CONCRETE BARRIER RAIL  |                                      |
| EFFECTIVE: APRIL 2006  |                                      |
|  serving you with pride | MONTANA DEPARTMENT OF TRANSPORTATION |



TYPE 1 ANCHOR  
(FOR TEMPORARY OR PERMANENT CONCRETE BARRIER  
RAIL INSTALLATIONS ON ASPHALT PAVEMENT)




TYPE 2 & 3 ANCHORS  
(FOR TEMPORARY CONCRETE BARRIER RAIL  
INSTALLATIONS ON CONCRETE PAVEMENT)

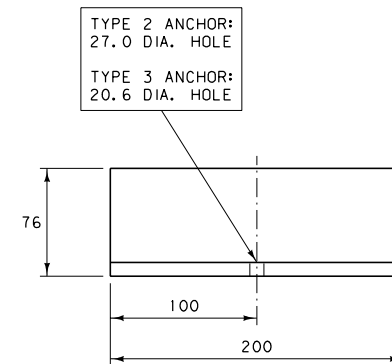
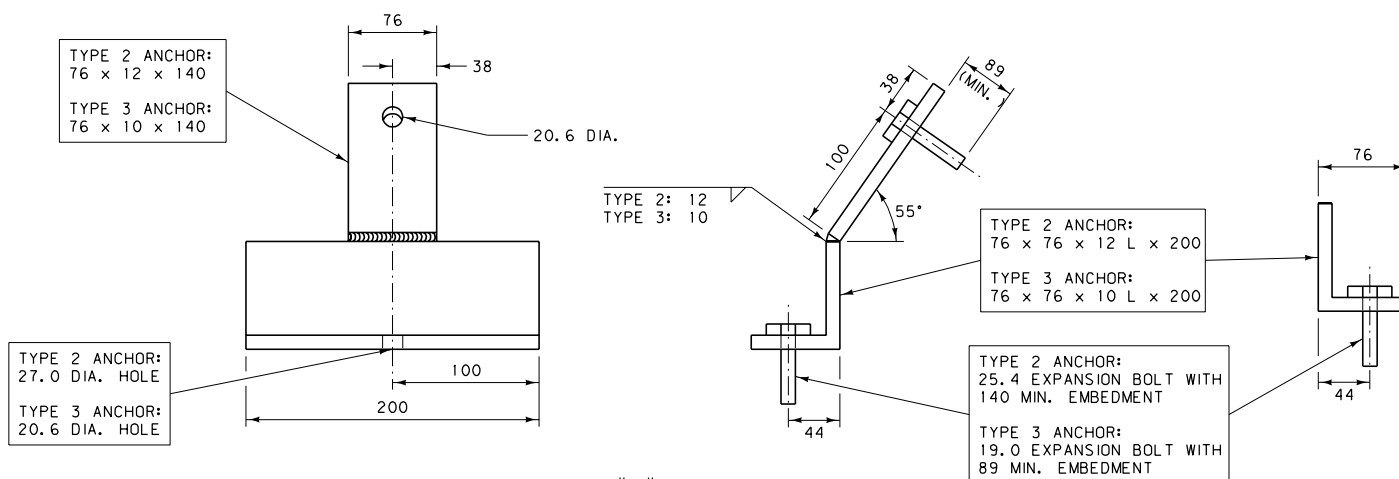


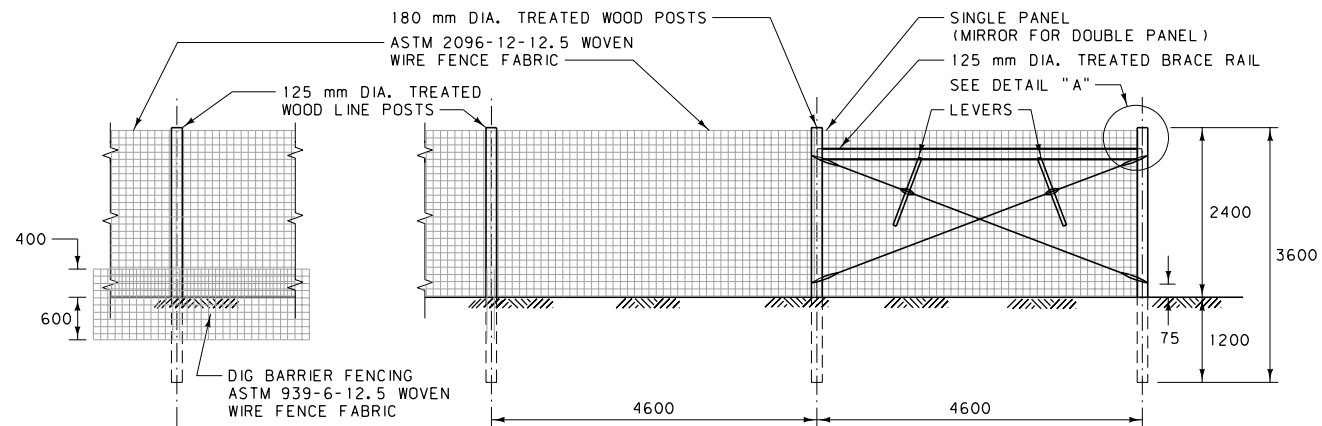
NOTES:

- USE THESE ANCHORS WITH STANDARD CONCRETE BARRIER RAIL (C.B.R.), AS SHOWN IN DTL. DWG. NO. 606-60, WHEN DEFLECTION OF THE SYSTEM NEEDS TO BE LIMITED.
- CAST THE PINNING HOLES INTO THE C.B.R. USING 50.8 I.D. STEEL PIPE. DO NOT DRILL THE PINNING HOLES.
- USE STEEL CONFORMING TO AASHTO M270M, GRADE 250 OR BETTER FOR PINS AND ATTACHMENT ANGLES. GALVANIZE IN ACCORDANCE WITH AASHTO M111M.
- USE TYPE 2 ANCHORS WHEN A DEEPER EMBEDMENT (140 mm) INTO THE BRIDGE DECK OR CONCRETE PAVEMENT IS PERMISSIBLE.
- ADJUST THE LOCATION OF THE TYPE 2 OR TYPE 3 ANCHORS TO AVOID THE MAIN REINFORCING WHEN PLACED ON BRIDGE DECKS.
- USE SHIMS TO PROPERLY FIT THE TYPE 2 OR TYPE 3 ANCHORS TO THE BARRIER AND ROADWAY SURFACES.
- AFTER REMOVING TYPE 2 OR TYPE 3 ANCHORS, CLEAN THE HOLES IN THE CONCRETE PAVEMENT AND FILL WITH AN APPROVED NON-SHRINK OR EPOXY GROUT.
- REMOVE TYPE 1 ANCHORS BY FIRST DRIVING THE STEEL PINS DOWN THROUGH THE BARRIER TO ALLOW LIFTING OF THE BARRIER WITHOUT INTERFERENCE. THEN REMOVE THE PINS FROM THE PAVEMENT AND FILL THE PINNING HOLES WITH AN APPROVED SEALANT.
- DO NOT INSTALL ANCHORED CONCRETE BARRIER RAIL FOR OBSTACLES WITHIN 1.1 m OF THE BASE (TRAFFIC SIDE) OF THE RAIL.

ALL DIMENSIONS ARE MILLIMETERS  
(mm) UNLESS OTHERWISE NOTED.

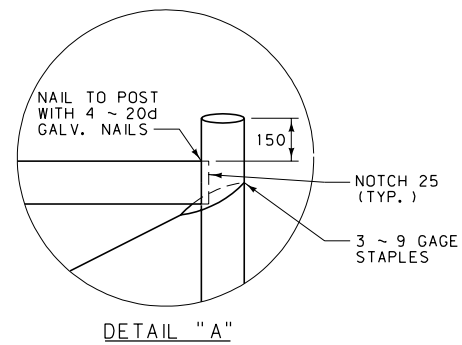
| DETAILED DRAWING  |                                      |
|---|--------------------------------------|
| REFERENCE   | DWG. NO.                             |
| STANDARD SPEC.  | 606-62                               |
| SECTION 554,606   |                                      |
| CONCRETE BARRIER RAIL ANCHORS   |                                      |
| EFFECTIVE: APRIL 2006   |                                      |
|  | MONTANA DEPARTMENT OF TRANSPORTATION |





WILDLIFE FENCE W/ DIG BARRIER  
PANELS NOT SHOWN

WILDLIFE FENCE



BRACE WIRES - ONE CONTINUOUS 9 OR 12.5 GAGE SMOOTH WIRE DOUBLED TO FORM A FOUR WIRE BRACE. TIE THE TWO ENDS NEAR THE TOP OF THE PANEL POSTS.

LEVERS - 37.5 x 50 x 300 MINIMUM SIZE.

| WIRE SPACING TABLE           |     |
|------------------------------|-----|
| WILDLIFE-FRIENDLY FARM FENCE |     |
| 1200 FENCE HEIGHT            |     |
| BARBLESS WIRE (12.5 GAGE)    | 300 |
| BARB WIRE (12.5 GAGE)        | 250 |
| BARBLESS WIRE (12.5 GAGE)    | 250 |
|                              | 400 |
| • DENOTES STAPLE LOCATIONS   |     |

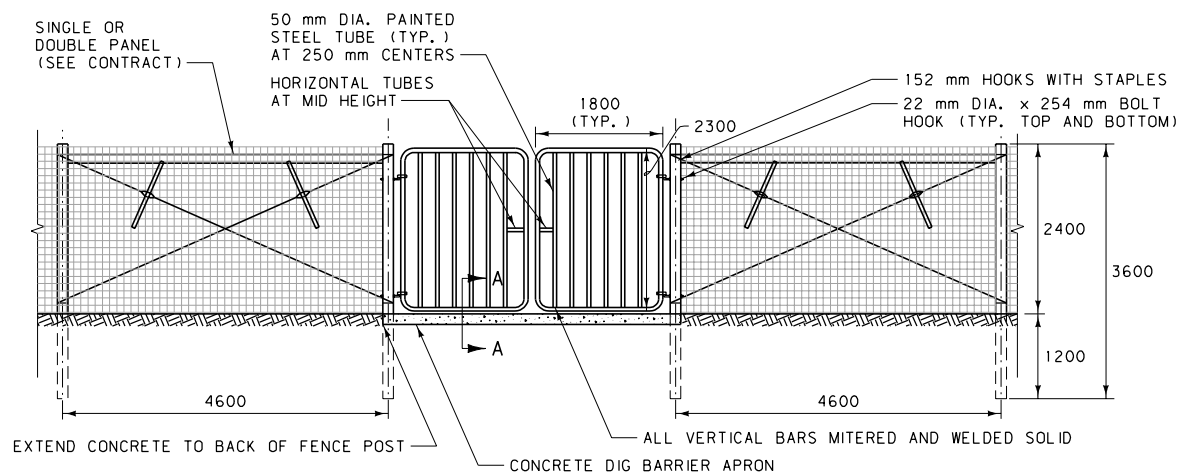
#### STAYS

1. USE WIRE STAYS ON ALL FENCES.
2. LOCATE STAYS HALFWAY BETWEEN FENCE POSTS.
3. WIRE STAYS ARE 50 mm LONGER THAN THE DISTANCE BETWEEN THE TOP AND BOTTOM WIRES.

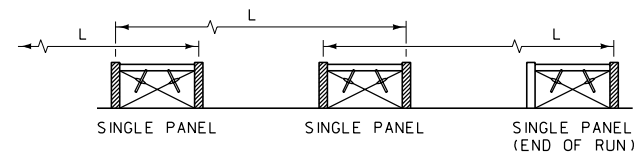
#### NOTES:

SEE DTL. DWG. NO. 607-00 FOR ADDITIONAL FARM FENCE DETAILS

WILDLIFE-FRIENDLY FARM FENCE



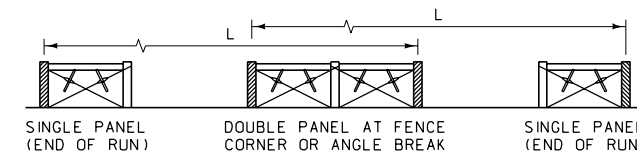
METAL MAINTENANCE ACCESS GATE  
CHAIN AND LOCK TO BE SUPPLIED BY MDT FORCES



| FENCE TYPE | RUN = L         | PANELS REQUIRED |
|------------|-----------------|-----------------|
| WILDLIFE   | LESS THAN 9.2 m | NONE            |
|            | 9.2 m - 101.2 m | SINGLE          |

#### NOTE:

TIE OFF ON ALL CROSS HATCHED OR SHADED POSTS.



FENCE PANEL TYPES

#### NOTES:

PLACE ALL FENCE WIRE ON PASTURE SIDE OF POST, EXCEPT ON CURVES. THEN, PLACE THE WIRE ON THE OUTSIDE OF THE CURVE.

POST SPACING IS GENERALLY MEASURED PARALLEL TO GROUND.

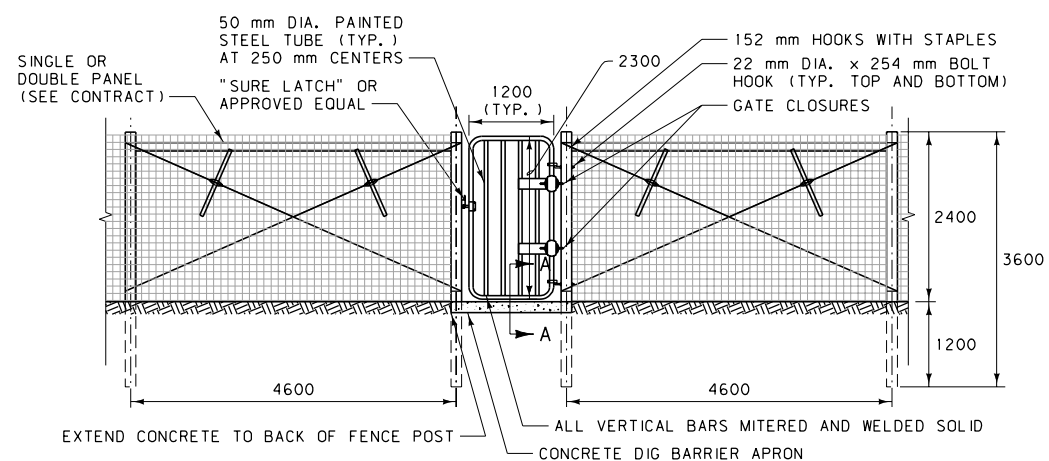
LINE POST SPACING IS 4600 mm CENTER TO CENTER. LINE POST SPACING FROM BRACE OR PANEL POST IS 4600 mm CENTER TO CENTER.

TO ATTACH WOVEN WIRE TO AN END POST, REMOVE TWO OR THREE VERTICAL STAY WIRES FROM THE END OF THE FENCE. PLACE THE FIRST COMPLETE VERTICAL STAY WIRE AGAINST THE POST. START AT THE MIDDLE OF THE HORIZONTAL LINE WIRES, WRAPPING AROUND THE END POST AT LEAST TWO TIMES AND THEN WRAPPING AROUND ITSELF FIVE TIMES.

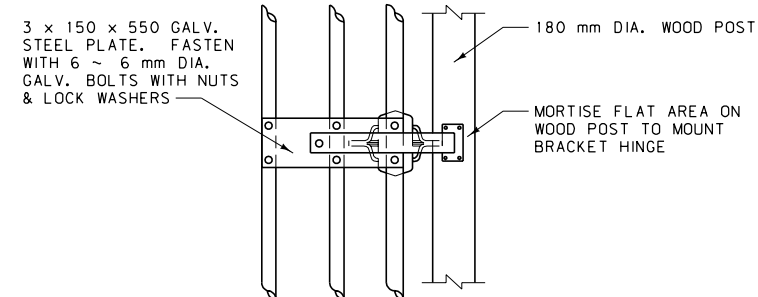
A DEADMAN MAY BE A PRECAST CONCRETE BLOCK, A CAST IN PLACE CONCRETE BLOCK, A ROCK OR OTHER APPROVED OBJECT WEIGHING AT LEAST 120 kg. BURY THE DEADMAN IN THE GROUND WITH AT LEAST 600 mm OF COVER. ATTACH THE DEADMAN TO THE FENCE WITH 3 STRANDS OF 9 GAGE WIRE OR 6 STRANDS OF 12.5 GAGE WIRE. SEE DTL. DWG. NO. 607-10 FOR ALTERNATE DEADMAN.

STAPLE THE BOTTOM, TOP, CENTER AND ALTERNATE WIRES OF WOVEN WIRE TO WOOD LINE POSTS.

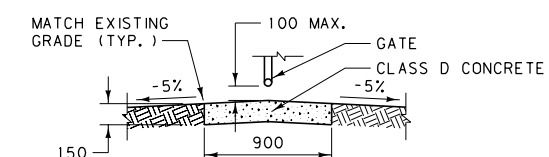
STAPLE ALL WIRES OF WOVEN WIRE TO WOOD CORNER POSTS OR POST USED TO TIE-OFF WIRE.



METAL EQUINE GATE




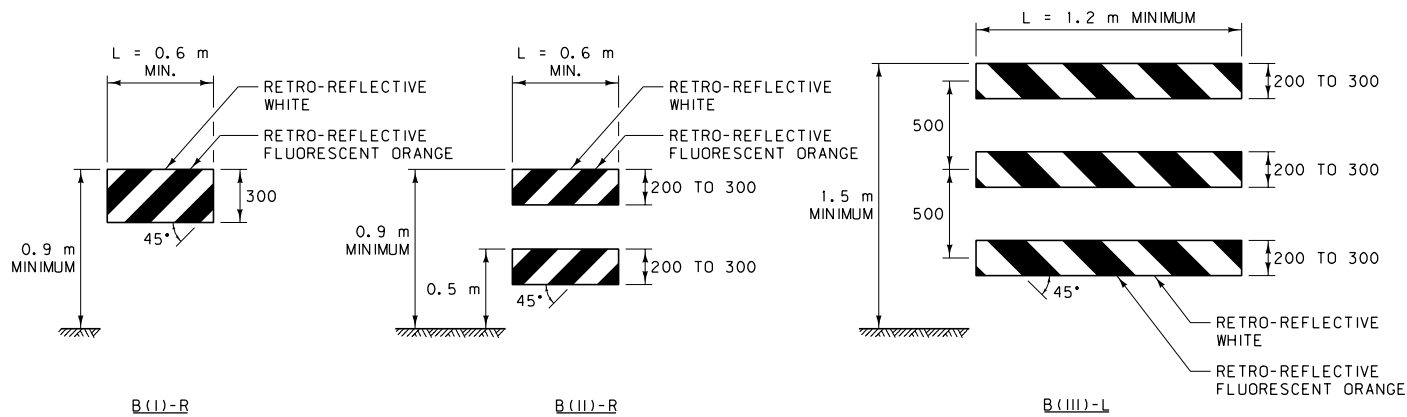
TIE BAR MOUNTING DETAIL  
FOR GATE CLOSERS



SECTION A-A  
CENTER CONCRETE DIG BARRIER APRON UNDER CLOSED GATE

ALL DIMENSIONS ARE MILLIMETERS (mm) UNLESS OTHERWISE NOTED.

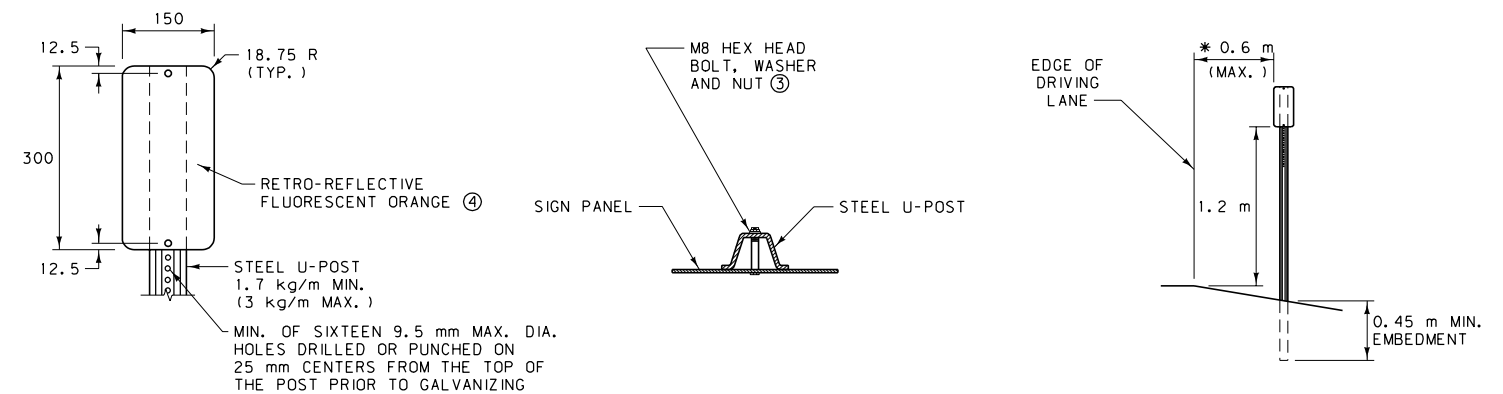
| DETAILED DRAWING   |                                      |
|--|--------------------------------------|
| REFERENCE STANDARD SPEC. SECTION 607   | DWG. NO. 607-50                      |
| WILDLIFE FENCE   |                                      |
| EFFECTIVE: APRIL 2006  |                                      |
|  serving you with pride | MONTANA DEPARTMENT OF TRANSPORTATION |



### PORTABLE BARRICADES

#### PORTABLE BARRICADE NOTES:

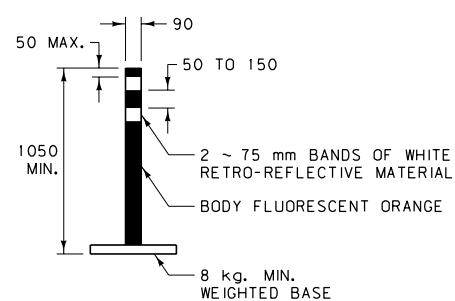
- ① RAIL STRIPES ARE 150 mm IN WIDTH FOR BARRICADES 0.9 m OR GREATER IN LENGTH. FOR BARRICADES LESS THAN 0.9 m IN LENGTH, 100 mm STRIPES MAY BE USED.
- ② THE PREDOMINANT COLOR FOR OTHER BARRICADE COMPONENTS IS WHITE, BUT UNPAINTED GALVANIZED METAL OR ALUMINUM COMPONENTS MAY BE USED.
- ③ WHERE B(III) BARRICADES ARE TO FACE TRAFFIC FROM TWO DIRECTIONS, STRIPING ON BOTH THE FRONT AND REAR SIDES IS REQUIRED.
- ④ USE MATERIALS FOR BARRICADE FRAMEWORK AND ASSEMBLY, INCLUDING ANY SIGNS AND MEANS OF ATTACHMENT, THAT MEET THE REQUIREMENTS FOR NCHRP 350 FOR WORK ZONE DEVICES. ALTERNATIVELY, SIGNS ON BARRICADES MAY BE MOUNTED DIRECTLY BEHIND BARRICADES ON SEPARATE SIGN SUPPORTS.
- ⑤ USE SANDBAGS OF SUFFICIENT WEIGHT TO HOLD THE BARRICADES IN PLACE. WATERPROOF SANDBAGS DURING PERIODS OF FREEZING WEATHER.
- ⑥ BARRICADES DESIGNATED "R" ARE PLACED TO THE RIGHT SIDE OF APPROACHING TRAFFIC. THOSE DESIGNATED "L" ARE PLACED TO THE LEFT SIDE.
- ⑦ USE RETRO-REFLECTIVE SHEETING AS PER THE CONTRACT.



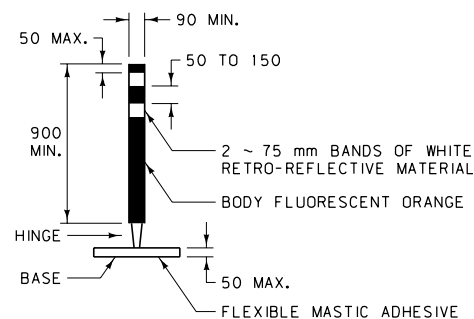
### TYPE 2 OBJECT MARKER

#### TYPE 2 OBJECT MARKER NOTES:

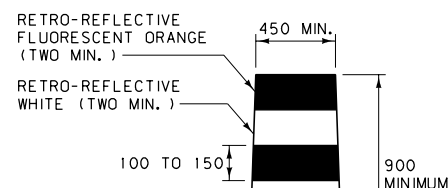
- ① USE TYPE 2 OBJECT MARKERS TO DELINEATE ROADSIDE CONSTRUCTIONS OF THE CLEAR ZONE (i.e. DROP OFFS, OBSTACLES, ABRUPT CHANGES IN ROADWAY ALIGNMENT, ETC.)
  - ② DO NOT USE TYPE 2 OBJECT MARKERS AS CHANNELIZING DEVICES.
  - ③ ATTACH PANELS TO POSTS AT BOTH TOP AND BOTTOM HOLE LOCATIONS.
  - ④ USE RETRO-REFLECTIVE SHEETING AS PER THE CONTRACT.
- \* REDUCE OR ELIMINATE THE 0.6 m DISTANCE WHEN OBSTACLE OR HAZARD IS LESS THAN 0.6 m FROM THE EDGE OF THE DRIVING LANE.



### FLEXIBLE GUIDE POST (TUBULAR MARKER)



### HINGED FLEXIBLE GUIDE POST (TUBULAR MARKER) (SELF RIGHTING AFTER IMPACT)



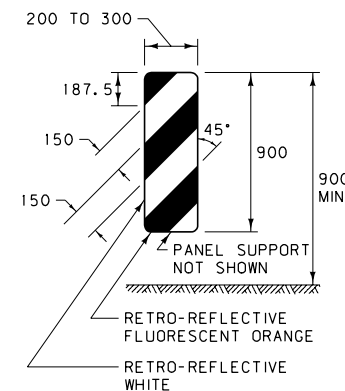
ADD BALLAST ACCORDING TO THE MANUFACTURER'S RECOMMENDATIONS TO HOLD THE DRUM IN PLACE.

DRUMS HAVE CLOSED TOPS.

### PLASTIC DRUM

#### FLEXIBLE GUIDE POST AND PLASTIC DRUM NOTES:

- ① USE FLEXIBLE GUIDE POSTS AND PLASTIC DRUMS AS CHANNELIZING DEVICES.
- ② USE ASTM TYPE III RETRO-REFLECTIVE SHEETING ON ALL PLASTIC DRUMS AND FLEXIBLE GUIDE POSTS.



### PORTABLE VERTICAL PANEL (VP-1R SHOWN. REVERSE FOR VP-1L.)


#### PORTABLE VERTICAL PANEL NOTES:

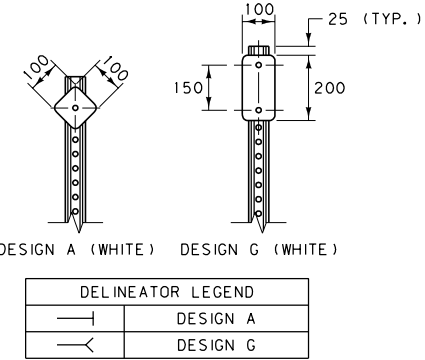
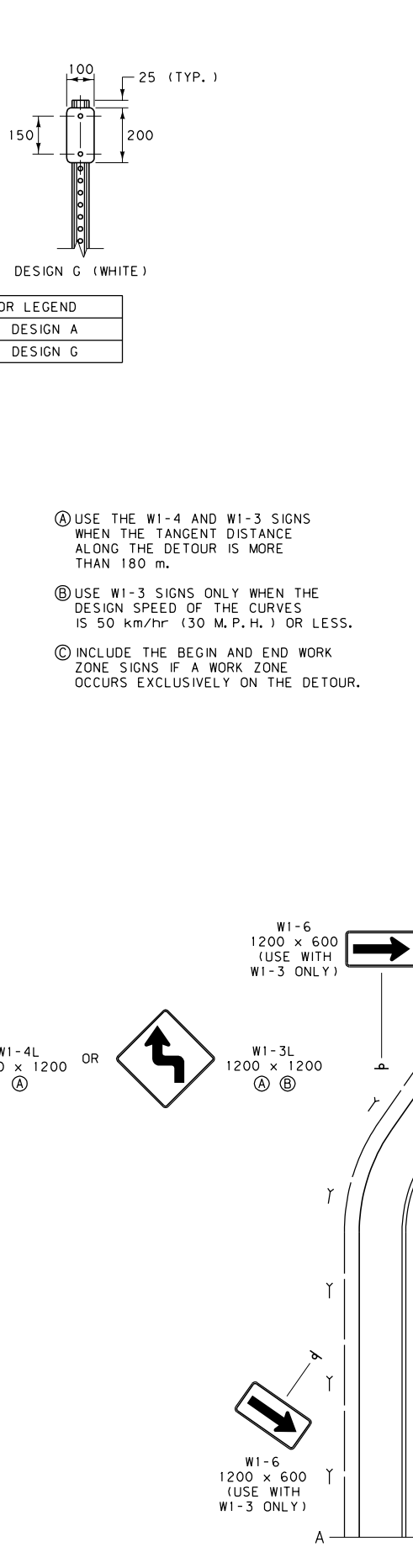
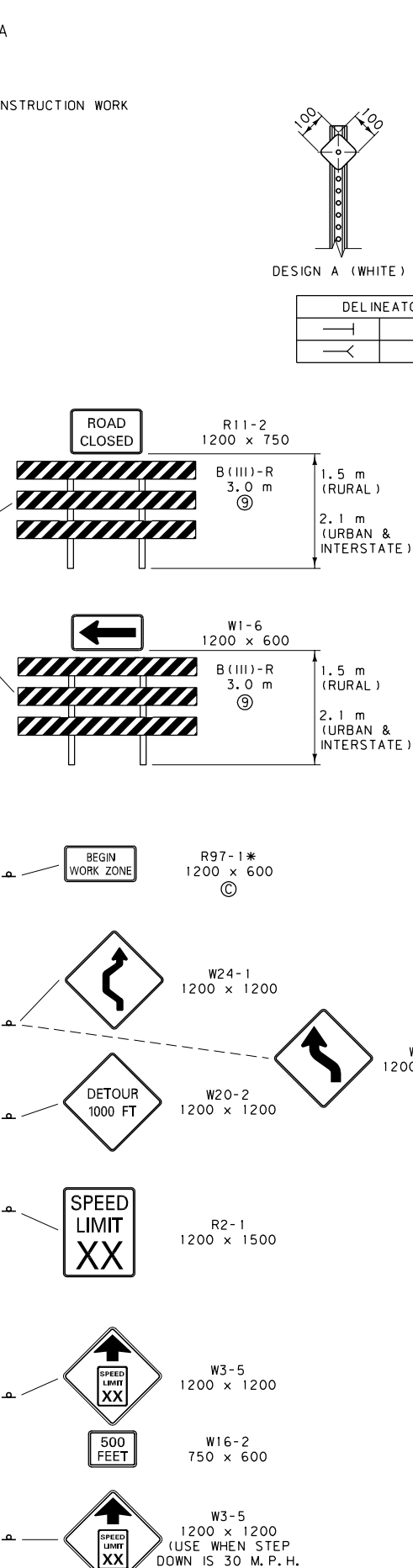
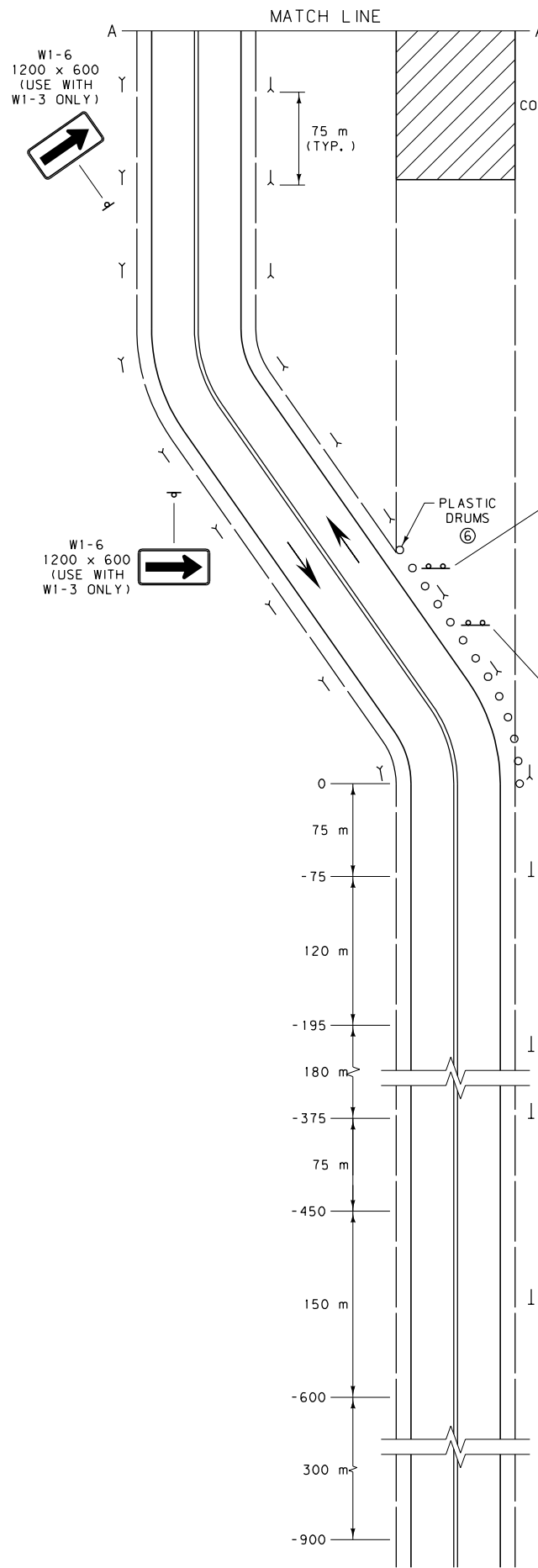
- ① USE PORTABLE VERTICAL PANELS AS CHANNELIZING DEVICES ONLY. DO NOT USE PORTABLE VERTICAL PANELS TO DELINEATE ROADSIDE CONSTRUCTIONS OF THE CLEAR ZONE.
- ② VERTICAL PANELS DESIGNATED "R" ARE PLACED TO THE RIGHT SIDE OF APPROACHING TRAFFIC. THOSE DESIGNATED "L" ARE PLACED TO THE LEFT SIDE.
- ③ USE RETRO-REFLECTIVE SHEETING AS PER THE CONTRACT.

#### GENERAL NOTES:

- ① SEE THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD) PART 6 FOR ADDITIONAL INFORMATION.

ALL DIMENSIONS ARE MILLIMETERS (mm) UNLESS OTHERWISE NOTED.


| DETAILED DRAWING   |                 |
|--|-----------------|
| REFERENCE STANDARD SPEC. SECTION 618   | DWG. NO. 618-00 |
| BARRICADES, CHANNELIZING DEVICES AND OBJECT MARKERS  |                 |
| EFFECTIVE: APRIL 2006  |                 |
|  MONTANA DEPARTMENT OF TRANSPORTATION |                 |



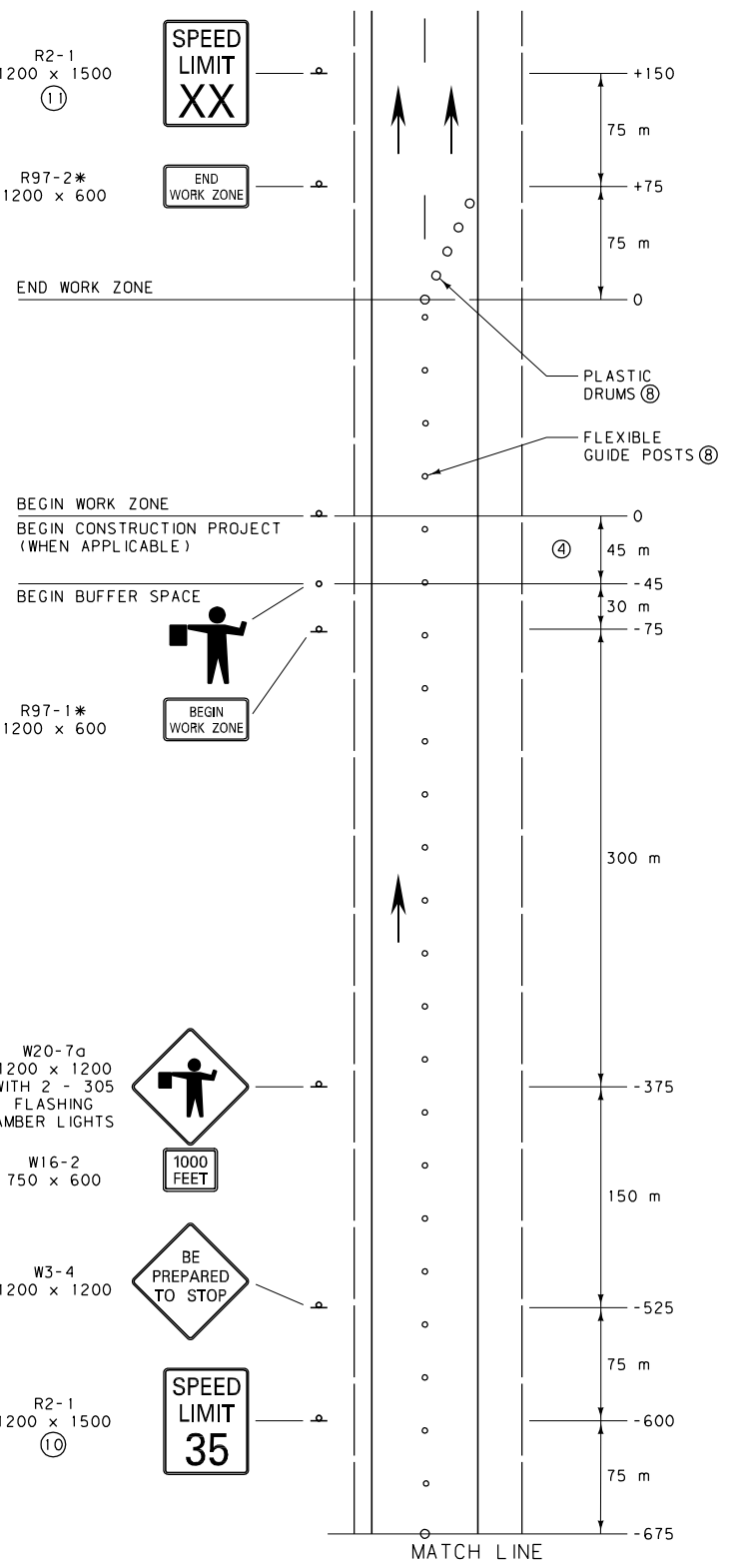
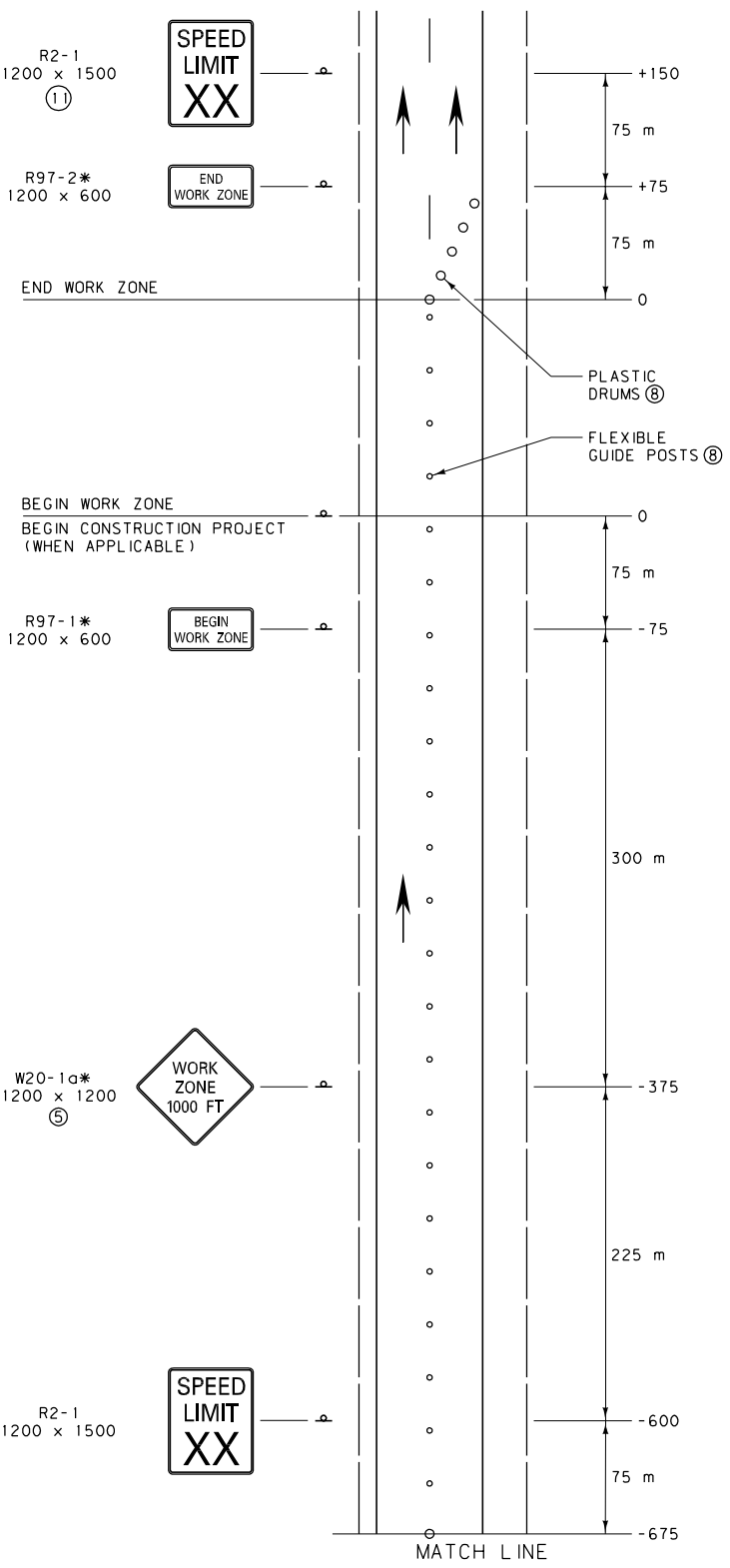
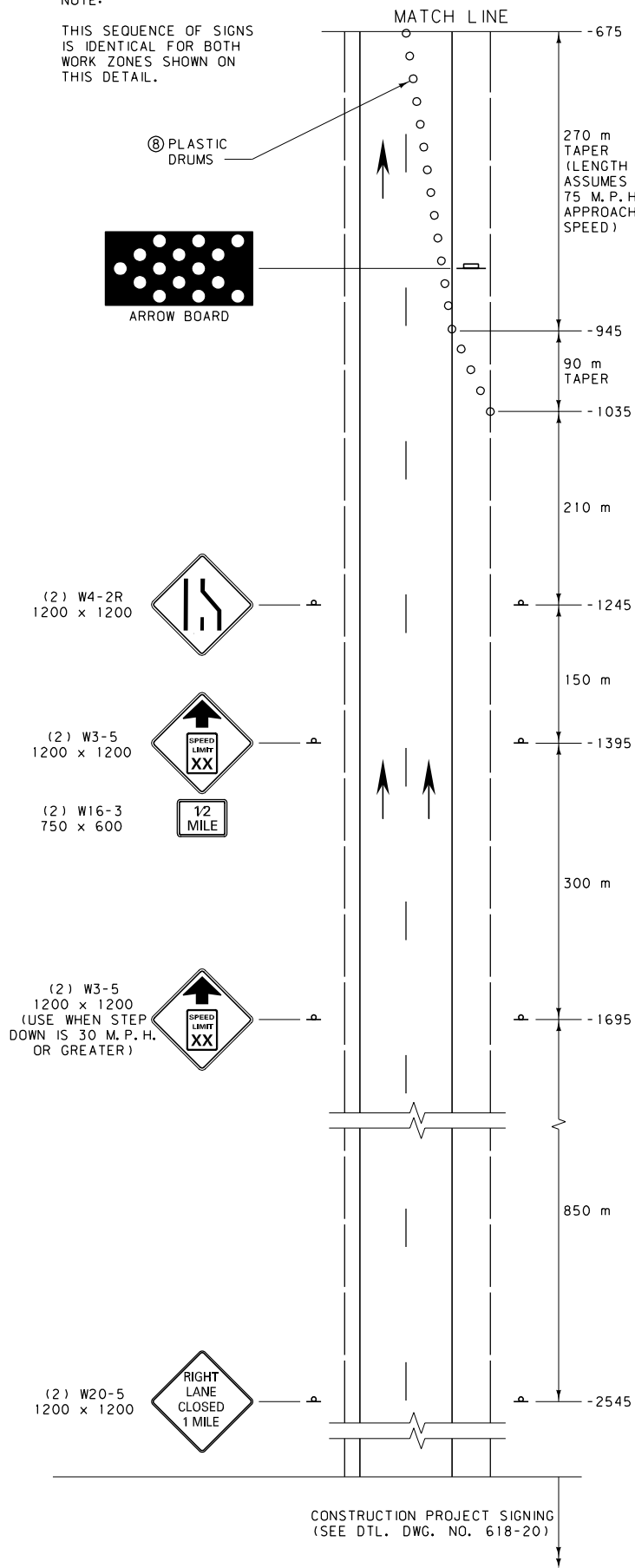
- Ⓐ USE THE W1-4 AND W1-3 SIGNS WHEN THE TANGENT DISTANCE ALONG THE DETOUR IS MORE THAN 180 m.
- Ⓑ USE W1-3 SIGNS ONLY WHEN THE DESIGN SPEED OF THE CURVES IS 50 km/hr (30 M.P.H.) OR LESS.
- Ⓒ INCLUDE THE BEGIN AND END WORK ZONE SIGNS IF A WORK ZONE OCCURS EXCLUSIVELY ON THE DETOUR.

- NOTES:
- 1 INCLUDE REGULATORY SIGNING ONLY IF THERE IS REASON TO RESTRICT SPEED. MODIFY REGULATORY SIGNS TO MATCH ADJACENT REGULATIONS.
  - 2 SET UP THIS SIGN LAYOUT IN EACH TRAFFIC DIRECTION.
  - 3 PAVED DETOURS 7.2 m WIDE OR GREATER HAVE 100 mm WHITE SHOULDER STRIPES AND APPROPRIATE CENTERLINE STRIPES.
  - 4 UNPAVED DETOURS MAY REQUIRE ADDITIONAL DELINEATION.
  - 5 USE ONLY POST MOUNTED SIGNS. DO NOT USE PORTABLE SIGN MOUNTS.
  - 6 PLACE PLASTIC DRUMS AT INTERVALS IN METERS OF NO MORE THAN 0.3 TIMES THE SPEED LIMIT IN M.P.H. OR AS DIRECTED BY THE ENGINEER FOR SPEEDS LESS THAN 35 M.P.H.
  - 7 XX = SPEED DETERMINED BY THE DETOUR DESIGN SPEED OR THE ENGINEER.
  - 8 THE WORK ZONE REFERS TO THE AREA WITHIN THE CONSTRUCTION PROJECT WHERE WORK IS ACTUALLY TAKING PLACE.
  - 9 USE MATERIALS FOR BARRICADE FRAMEWORK AND ASSEMBLY, INCLUDING ANY SIGNS AND MEANS OF ATTACHMENT, THAT MEET THE REQUIREMENTS FOR NCHRP 350 FOR WORK ZONE DEVICES. ALTERNATIVELY, SIGNS ON BARRICADES MAY BE MOUNTED DIRECTLY BEHIND BARRICADES ON SEPARATE SIGN SUPPORTS.
  - 10 POST THE END OF WORK ZONE SPEED LIMIT APPROPRIATE FOR ALL VEHICLES FOR THE REMAINDER OF THE CONSTRUCTION PROJECT BEFORE RESUMING TO NORMAL POSTED SPEED LIMITS AT THE END OF THE CONSTRUCTION PROJECT.
- \* DENOTES SIGNS THAT ARE UNIQUE TO MONTANA.

ALL DIMENSIONS ARE MILLIMETERS (mm) UNLESS OTHERWISE NOTED.


| DETAILED DRAWING   |          |
|--|----------|
| REFERENCE  | DWG. NO. |
| STANDARD SPEC.   | 618-18   |
| TWO-LANE CONSTRUCTION PROJECT DETOUR   |          |
| EFFECTIVE: APRIL 2006  |          |
|  MONTANA DEPARTMENT OF TRANSPORTATION |          |

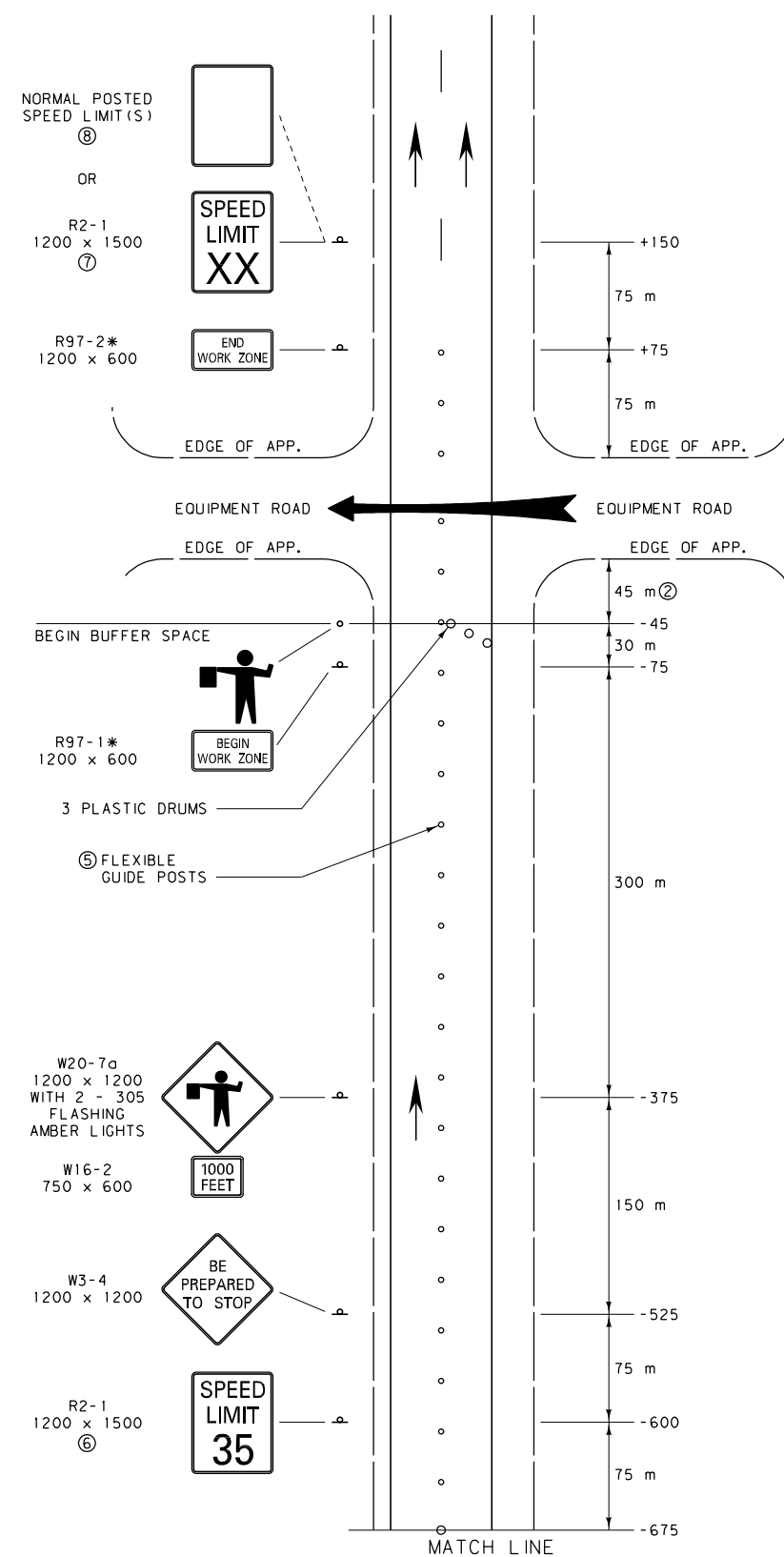
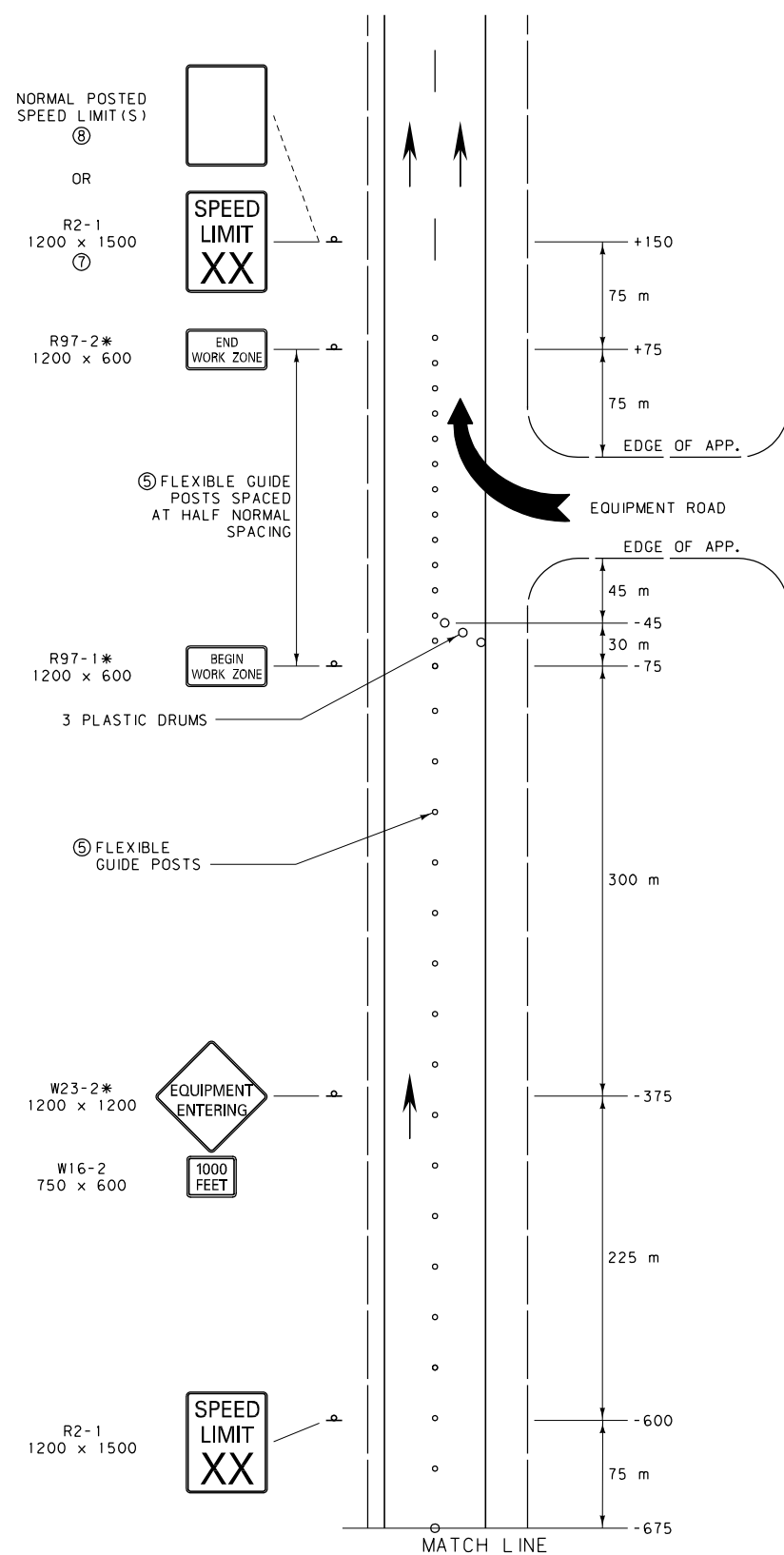
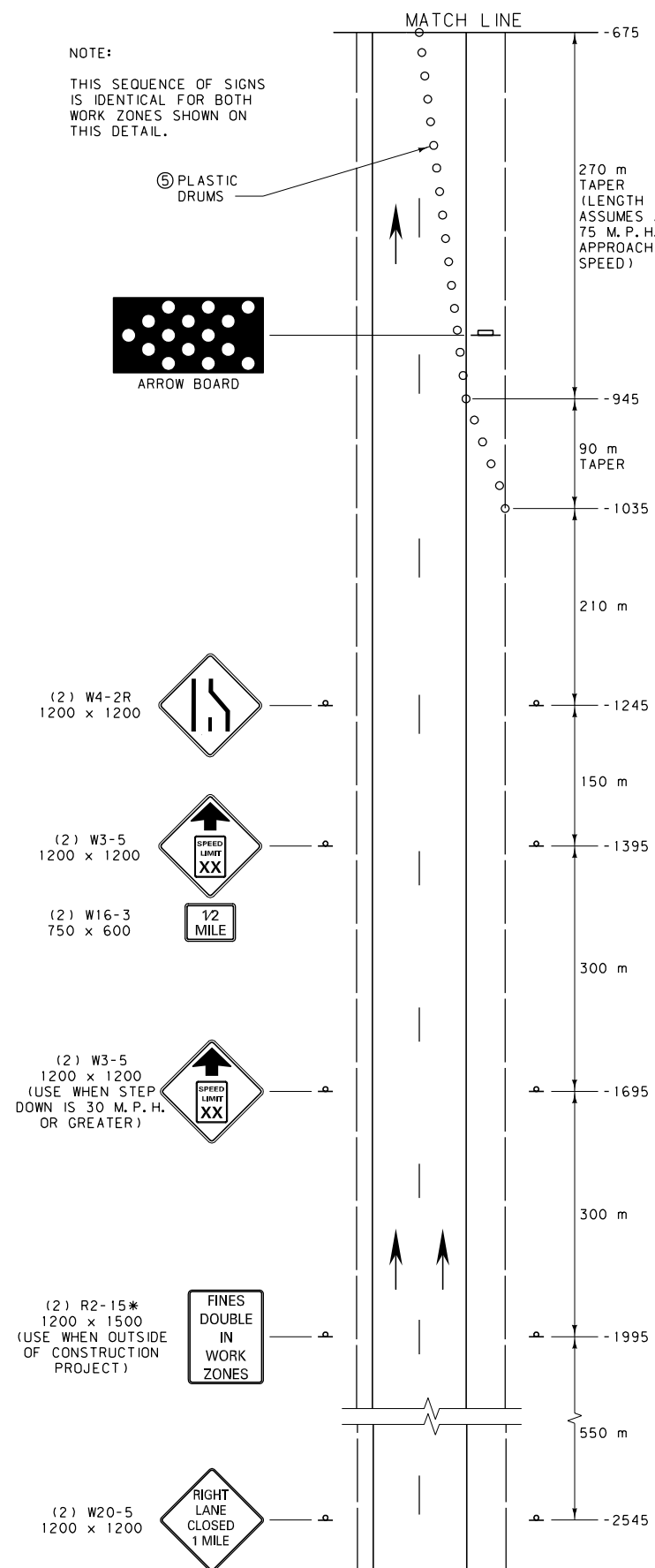
NOTE:  
THIS SEQUENCE OF SIGNS  
IS IDENTICAL FOR BOTH  
WORK ZONES SHOWN ON  
THIS DETAIL.



- NOTES:
- ① THESE SIGN LAYOUTS WORK IN CONJUNCTION WITH THE PERMANENT LAYOUT ILLUSTRATED ON DTL. DWG. NO. 618-20 FOR WORK ZONES LOCATED AT THE BEGIN AND END OF THE CONSTRUCTION PROJECT.
  - ② INCLUDE REGULATORY SIGNING ONLY IF THERE IS REASON TO RESTRICT SPEED WITHIN THE WORK ZONE. MODIFY REGULATORY SIGNS TO MATCH ADJACENT REGULATIONS.
  - ③ THE WORK ZONE REFERS TO THE AREA WITHIN THE CONSTRUCTION PROJECT WHERE WORK IS ACTUALLY TAKING PLACE.
  - ④ THE BUFFER SPACE MAY BE INCREASED FOR DOWNGRADES AND OTHER CONDITIONS THAT AFFECT STOPPING DISTANCE.
  - ⑤ USE MORE SPECIFIC SIGNS, WHERE APPLICABLE, SUCH AS W8-3 "PAVEMENT ENDS."
  - ⑥ XX = SPEED DETERMINED BY THE ENGINEER.
  - ⑦ PROVIDE A SECOND FLAGGER WHEN REQUIRED BY STANDARD SPECIFICATIONS, SECTION 618.
  - ⑧ SPACE FLEXIBLE GUIDE POSTS ON TANGENTS AT INTERVALS IN METERS OF NO MORE THAN 0.6 TIMES THE SPEED LIMIT IN M.P.H. SPACE PLASTIC DRUMS IN ALL TAPER SECTIONS AT INTERVALS IN METERS OF NO MORE THAN 0.3 TIMES THE SPEED LIMIT IN M.P.H. FOR SPEED LIMITS LESS THAN 35 M.P.H., SPACE CHANNELIZING DEVICES AS DIRECTED BY THE ENGINEER.
  - ⑨ WHEN PORTABLE SIGNS ARE USED, PLACE AS DIRECTED BY THE ENGINEER.
  - ⑩ IF FLAGGER IS MORE THAN 1.6 km FROM THE LANE CLOSURE, INCLUDE W3-5 SIGNS, AS REQUIRED.
  - ⑪ POST THE END OF WORK ZONE SPEED LIMIT APPROPRIATE FOR ALL VEHICLES FOR THE REMAINDER OF THE CONSTRUCTION PROJECT BEFORE RESUMING TO NORMAL POSTED SPEED LIMITS AT THE END OF THE CONSTRUCTION PROJECT.
- \* DENOTES SIGNS THAT ARE UNIQUE TO MONTANA.


ALL DIMENSIONS ARE MILLIMETERS  
(mm) UNLESS OTHERWISE NOTED.

| DETAILED DRAWING  |          |
|---|----------|
| REFERENCE   | DWG. NO. |
| STANDARD SPEC.  | 618-24   |
| SECTION 618   |          |
| DIVIDED FOUR-LANE<br>CONSTRUCTION PROJECT<br>WORK ZONES   |          |
| EFFECTIVE: APRIL 2006   |          |
|  MONTANA DEPARTMENT<br>OF TRANSPORTATION |          |

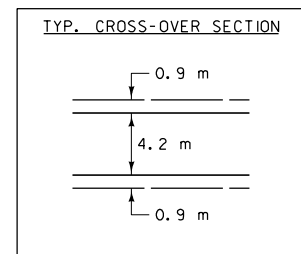
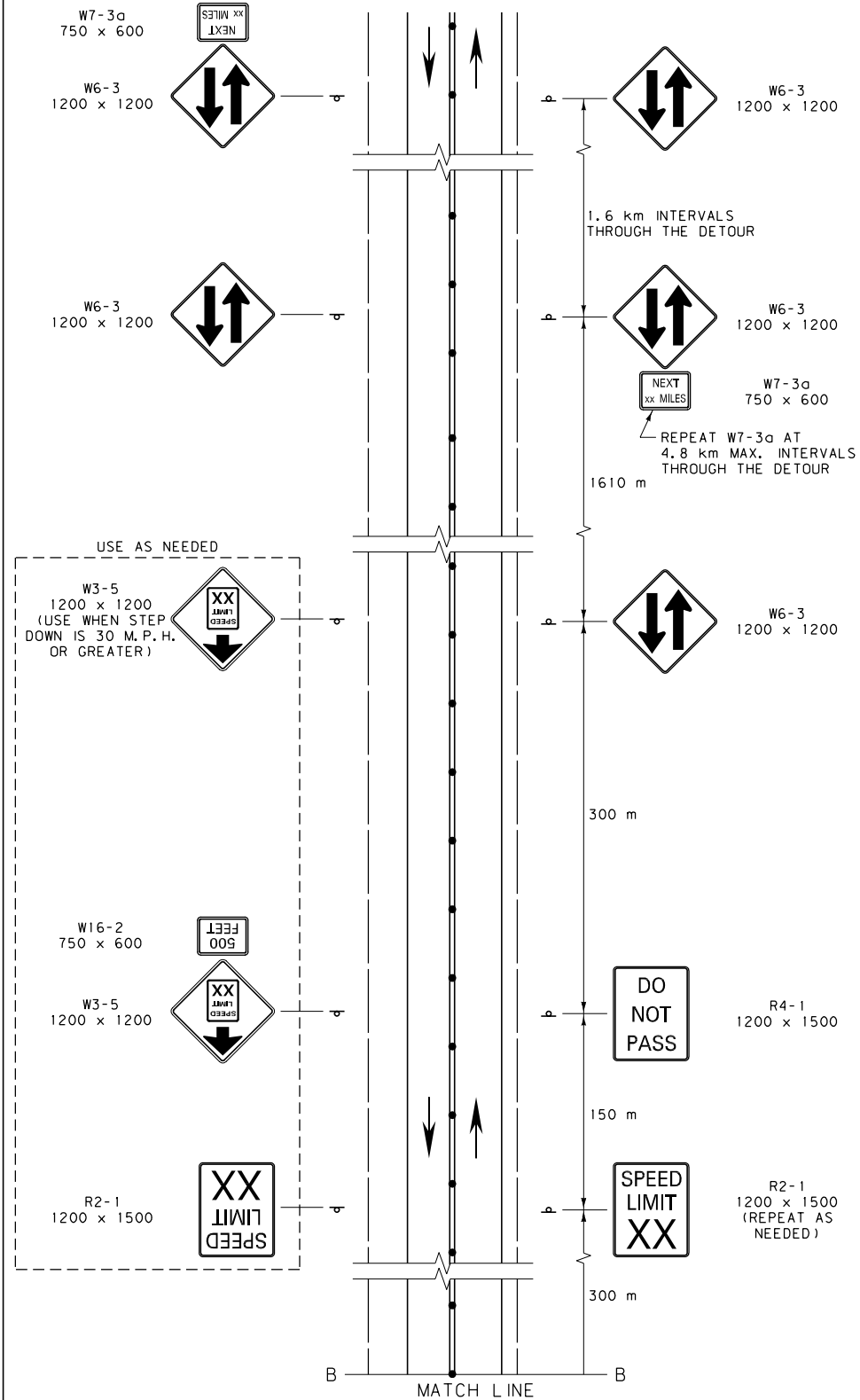
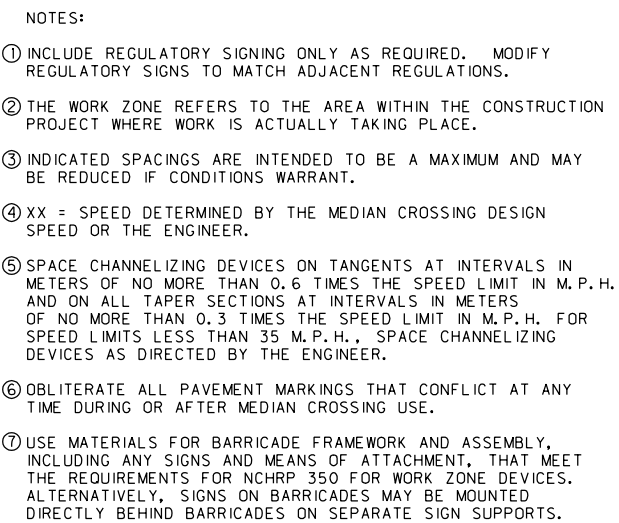


- NOTES:
- ① INCLUDE REGULATORY SIGNING ONLY IF THERE IS REASON TO RESTRICT SPEED WITHIN THE WORK ZONE. MODIFY REGULATORY SIGNS TO MATCH ADJACENT REGULATIONS.
  - ② THE BUFFER SPACE MAY BE INCREASED FOR DOWNGRADES AND OTHER CONDITIONS THAT AFFECT STOPPING DISTANCE.
  - ③ XX = SPEED DETERMINED BY THE ENGINEER.
  - ④ THE WORK ZONE REFERS TO THE AREA WHERE WORK IS ACTUALLY TAKING PLACE. WHEN THIS OCCURS OUTSIDE OF A CONSTRUCTION PROJECT, INCLUDE THE R2-15\* SIGN.
  - ⑤ SPACE FLEXIBLE CROWN POSTS ON TANGENTS AT INTERVALS IN METERS OF NO MORE THAN 0.6 TIMES THE SPEED LIMIT IN M.P.H. SPACE PLASTIC SIGNS IN ALL TAPER SECTIONS AT INTERVALS IN METERS OF NO MORE THAN 0.3 TIMES THE SPEED LIMIT IN M.P.H. FOR SPEED LIMITS LESS THAN 35 M.P.H., SPACE CHANNELIZING DEVICES AS DIRECTED BY THE ENGINEER.
  - ⑥ IF FLAGGER IS MORE THAN 1.6 km FROM THE LANE CLOSURE, INCLUDE W3-5 SIGNS, AS REQUIRED.
  - ⑦ POST THE END OF WORK ZONE SPEED LIMIT APPROPRIATE FOR ALL VEHICLES FOR THE REMAINDER OF THE CONSTRUCTION PROJECT BEFORE RESUMING TO NORMAL POSTED SPEED LIMITS AT THE END OF THE CONSTRUCTION PROJECT.
  - ⑧ WHEN OUTSIDE OF A CONSTRUCTION PROJECT, POST THE SPEED LIMIT CONSISTING OF ONE LIMIT WHEN THE NORMAL POSTED SPEED LIMIT FOR ALL VEHICLES IS THE SAME. WHEN CAR AND TRUCK SPEED LIMITS DIFFER, POST BOTH LIMITS ON A SINGLE SIGN.
- \* DENOTES SIGNS THAT ARE UNIQUE TO MONTANA.


ALL DIMENSIONS ARE MILLIMETERS  
(mm) UNLESS OTHERWISE NOTED.

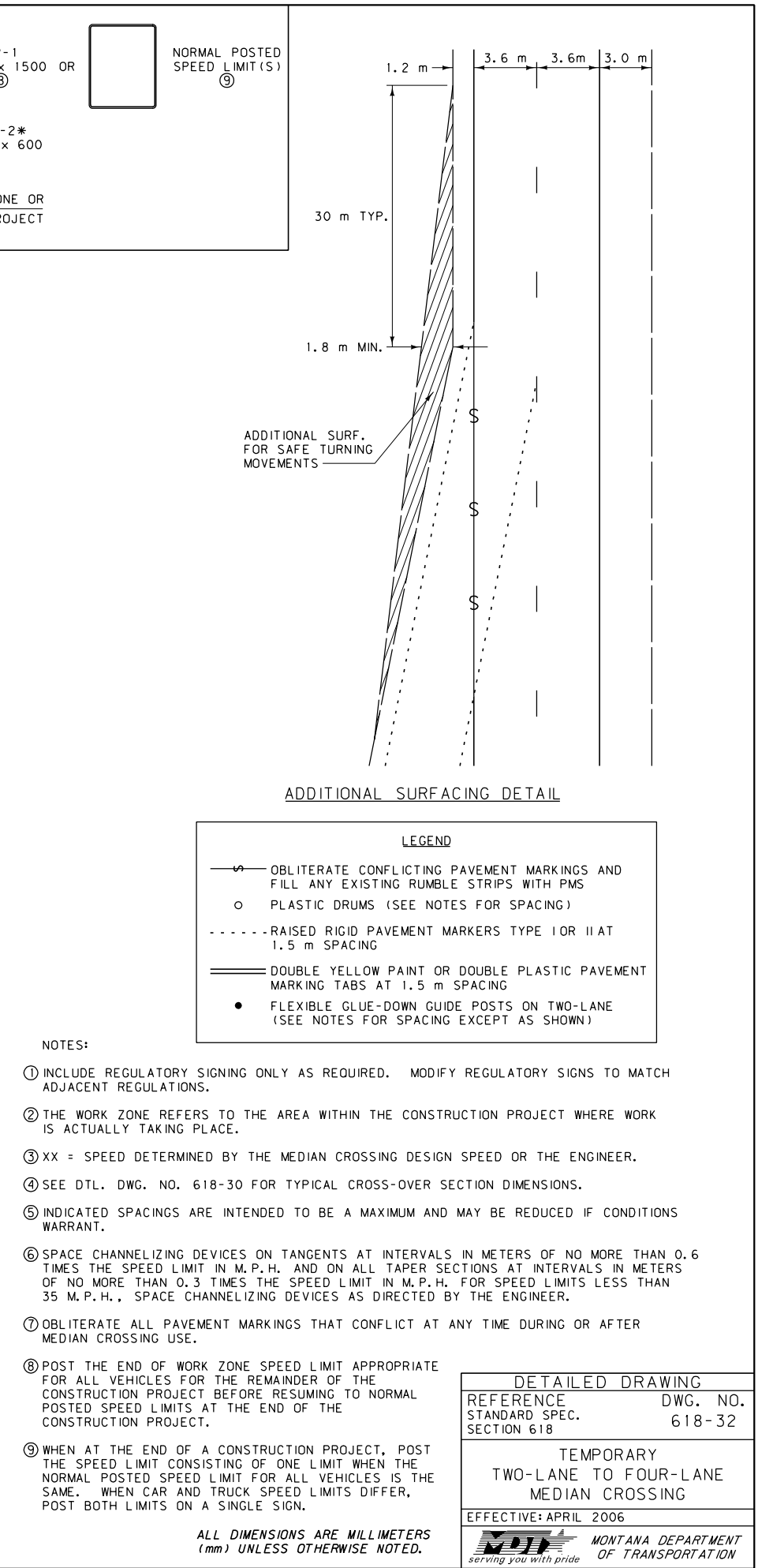
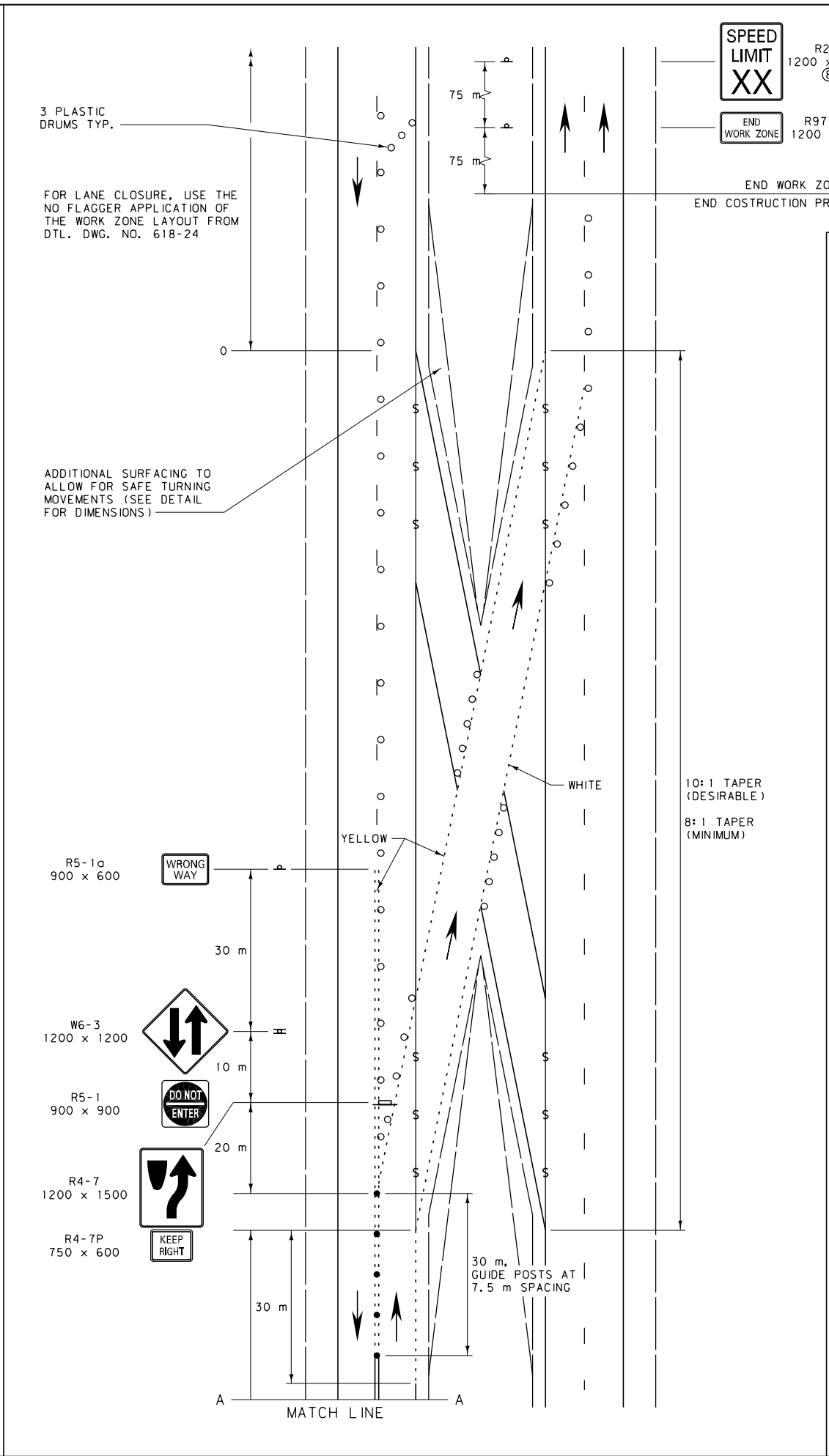
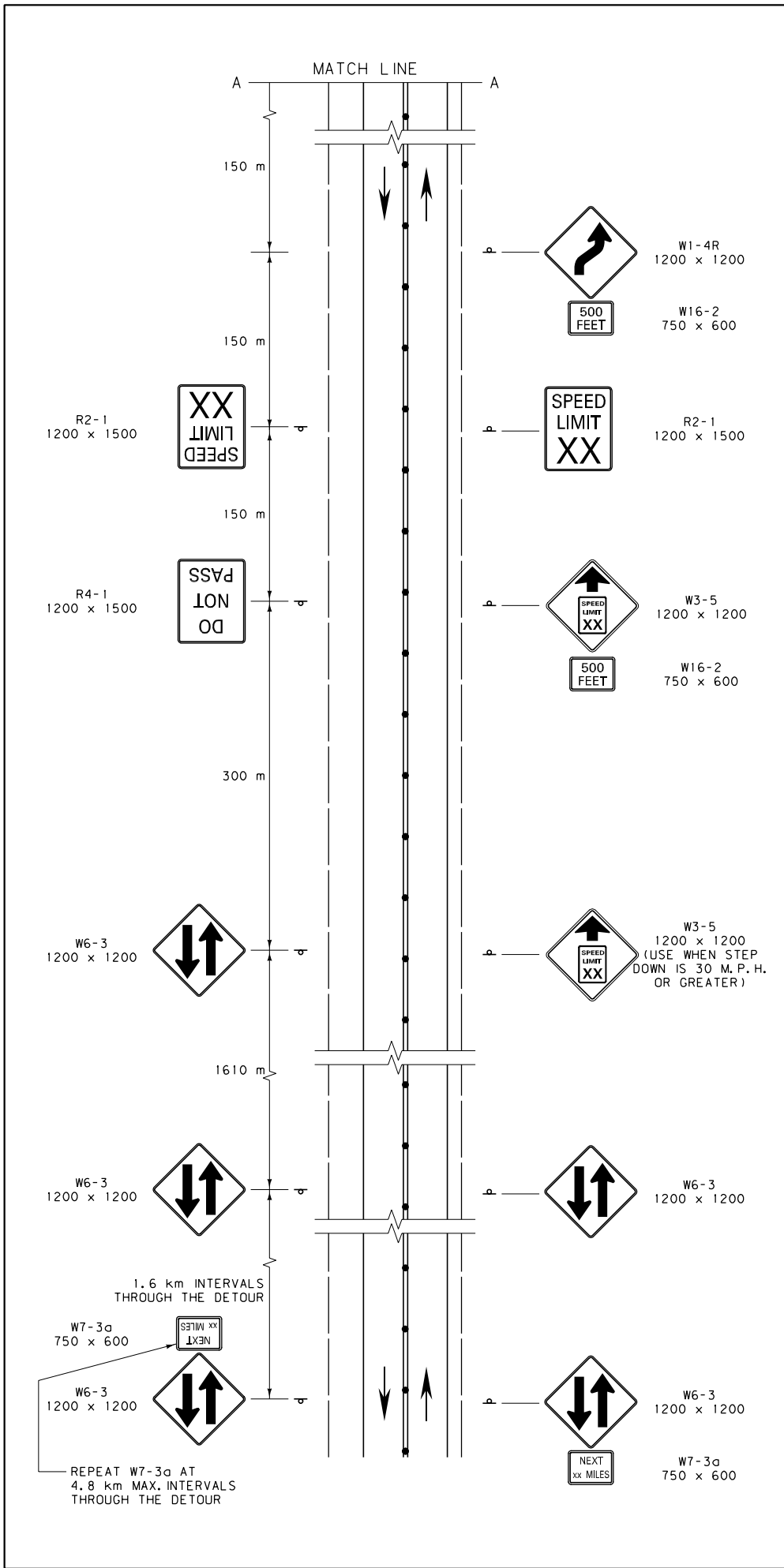
|  |   |
|--|---|
| DETAILED DRAWING   |   |
| REFERENCE  | DWG. NO.  |
| STANDARD SPEC.   | 618-27  |
| SECTION 618  |   |
| DIVIDED FOUR-LANE<br>EQUIPMENT ENTRANCES   |   |
| EFFECTIVE: APRIL 2006  |   |
| <br><i>serving you with pride</i> | <i>MONTANA DEPARTMENT<br/>OF TRANSPORTATION</i> |





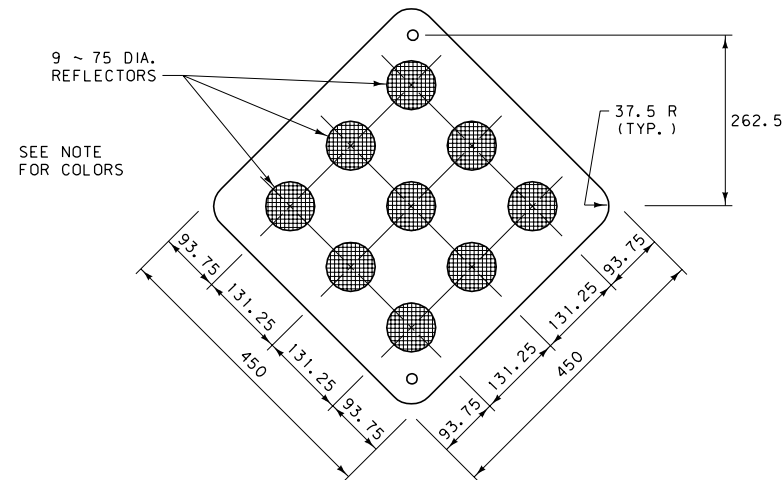
ALL DIMENSIONS ARE MILLIMETERS  
(mm) UNLESS OTHERWISE NOTED.

|  |   |
|--|---|
| DETAILED DRAWING   |   |
| REFERENCE<br>STANDARD SPEC.<br>SECTION 618   | DWG. NO.<br>618-30                                    |
| TEMPORARY<br>FOUR-LANE TO TWO-LANE<br>MEDIAN CROSSING  |   |
| EFFECTIVE: APRIL 2006  |   |
| <br><i>serving you with pride</i> | <b>MONTANA DEPARTMENT</b><br><b>OF TRANSPORTATION</b> |





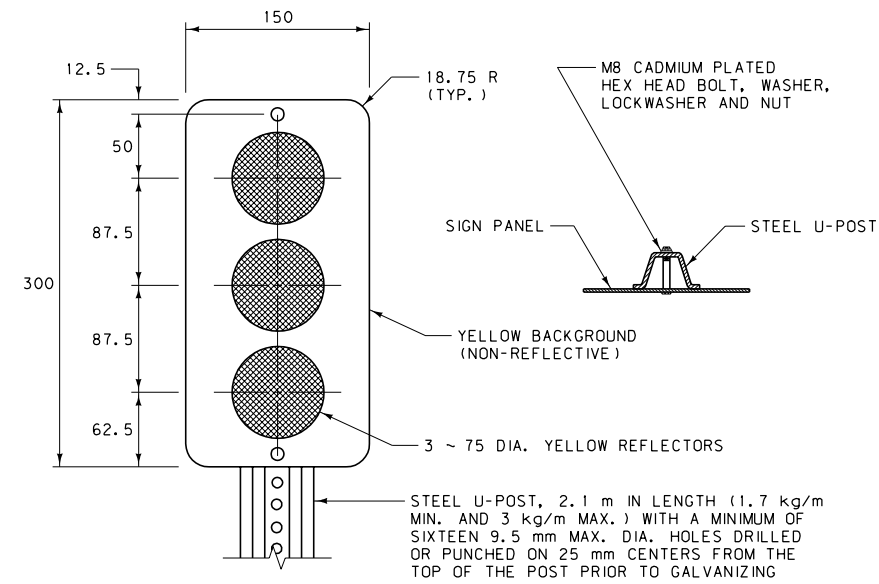
TYPE 1  
X3-2



SEE NOTE FOR COLORS

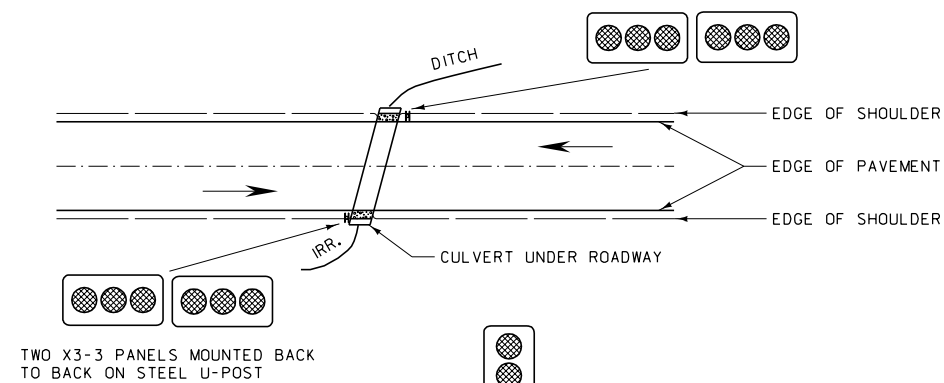
NOTE:  
TYPE 1 OBJECT MARKERS HAVE YELLOW REFLECTORS ON A YELLOW OR BLACK BACKGROUND OR AN ALL YELLOW RETRO-REFLECTORIZED PANEL OF THE SAME SIZE. IF USED AS END OF ROAD MARKERS, TYPE 1 MARKERS ARE RETRO-REFLECTORIZED RED OR HAVE RED REFLECTORS ON A RED OR BLACK BACKGROUND.

TYPE 2  
X3-3

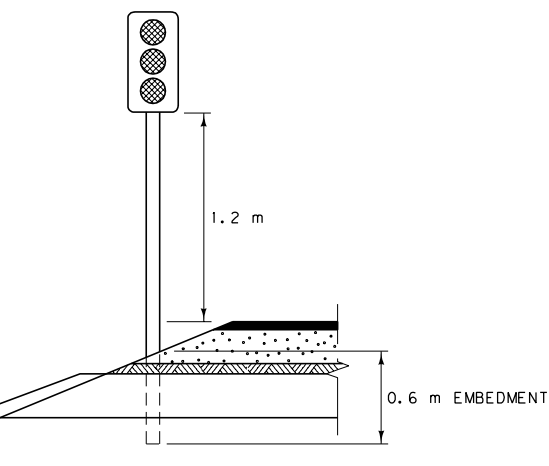


ALTERNATE DESIGN FOR TYPE 2 OBJECT MARKERS IS A YELLOW RETRO-REFLECTORIZED PANEL OF THE SAME SIZE.

TWO X3-3 PANELS MOUNTED BACK TO BACK ON STEEL U-POST



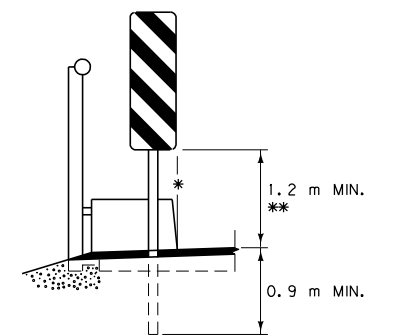
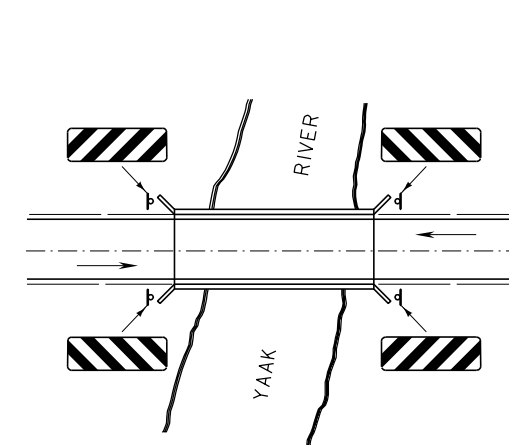
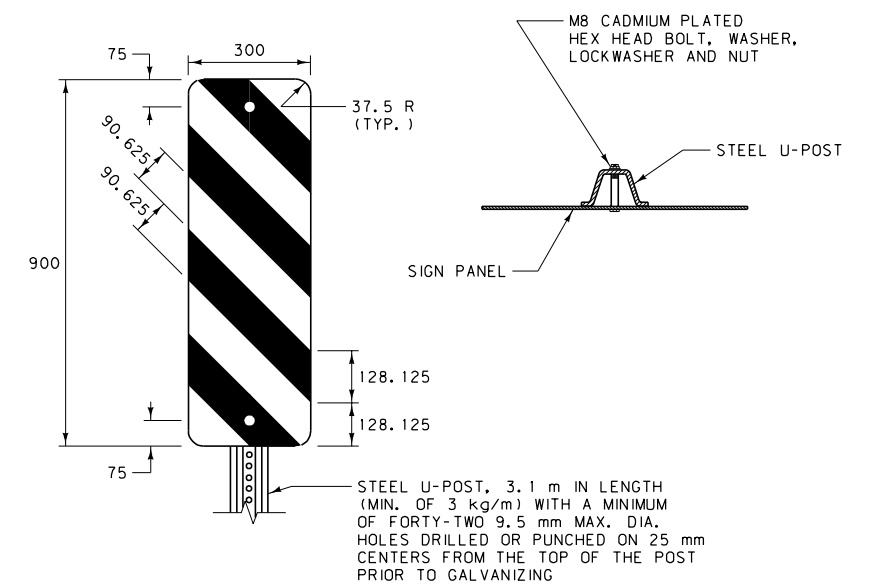
TWO X3-3 PANELS MOUNTED BACK TO BACK ON STEEL U-POST



PLACE POST AND PANEL(S) SO THAT PANEL(S) ARE DIRECTLY ADJACENT TO INNER-MOST EDGE OF OBJECT NEAREST TRAVELED WAY.

TYPICAL USE AND PLACEMENT

TYPE 3  
OM-3  
(OM-3L SHOWN)



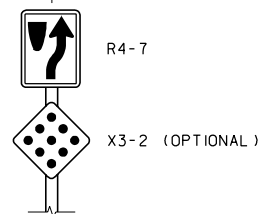
\* PLACE POST AND PANEL SO THAT PANEL EDGE IS FLUSH WITH FACE OF OBJECT NEAREST TRAVELED WAY.

\*\* WHEN MOUNTED 2.4 m OR MORE FROM CURB OR SHOULDER, THE MOUNTING HEIGHT IS MEASURED FROM THE GROUND LINE INSTEAD OF THE EDGE OF PAVEMENT.


TYPICAL USE AND PLACEMENT

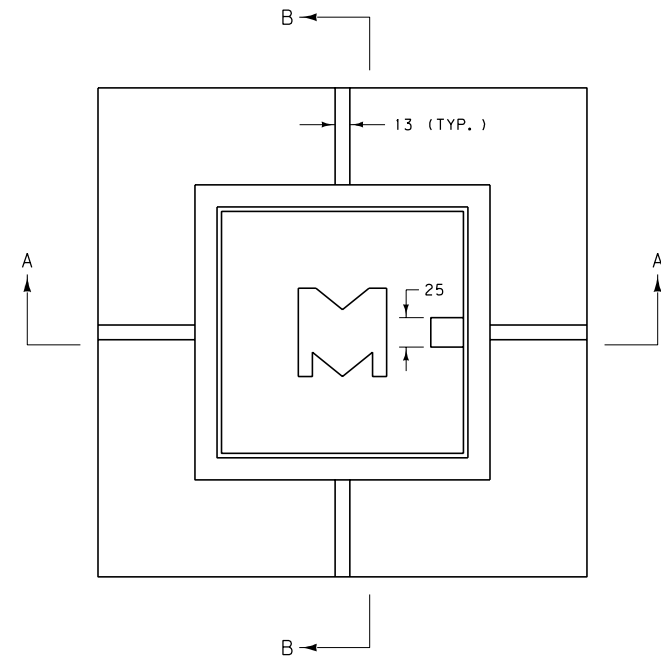
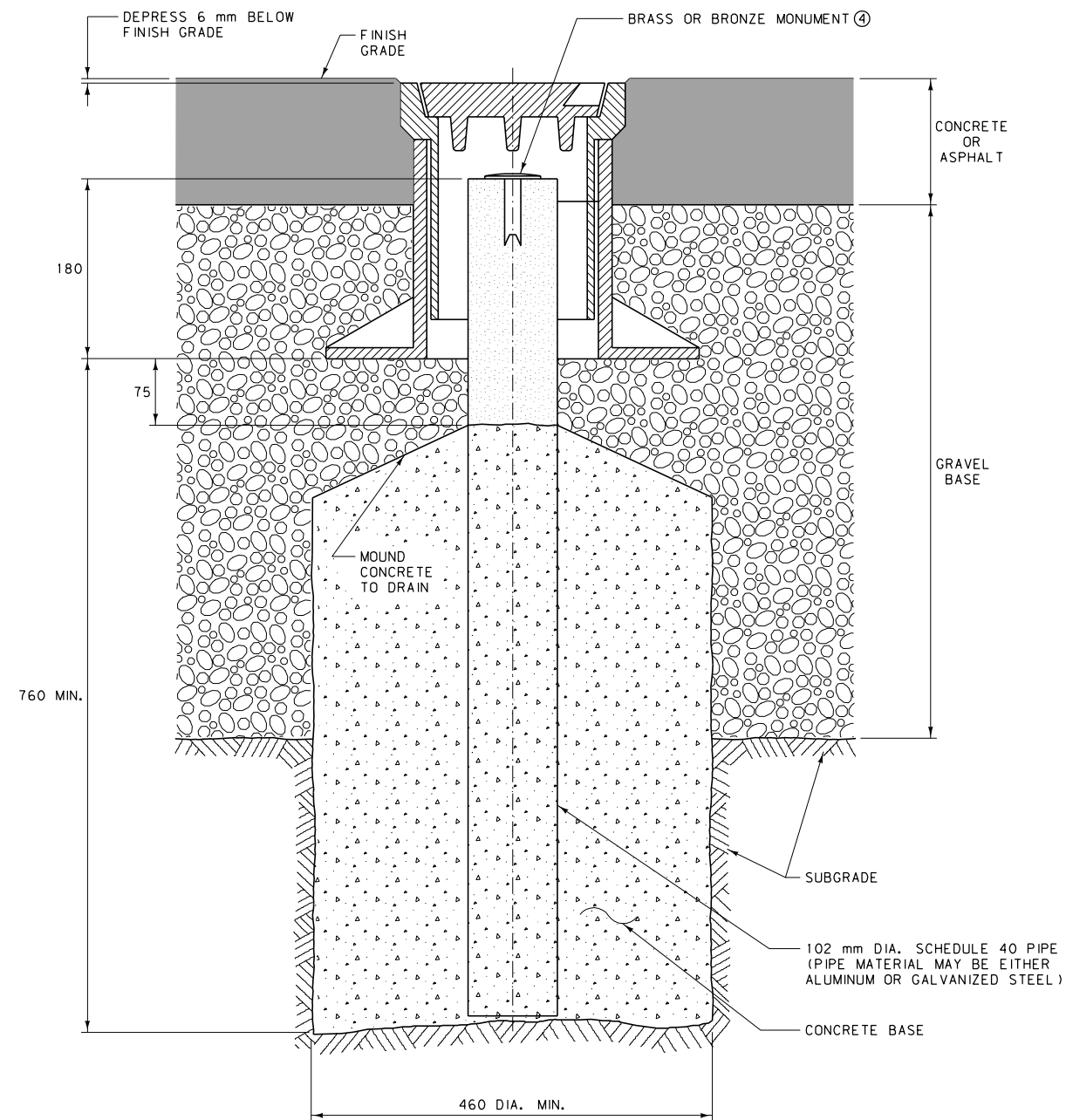
TYPICAL USE AND PLACEMENT

PLACEMENT OF X3-2 IS USED ONLY AS OPTIONAL TO ENHANCE TARGET VALUE WHEN NEEDED.

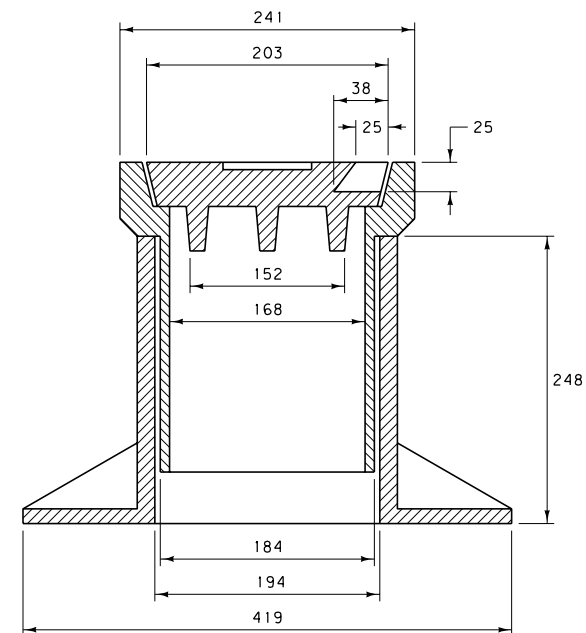


ALL DIMENSIONS ARE MILLIMETERS (mm) UNLESS OTHERWISE NOTED.

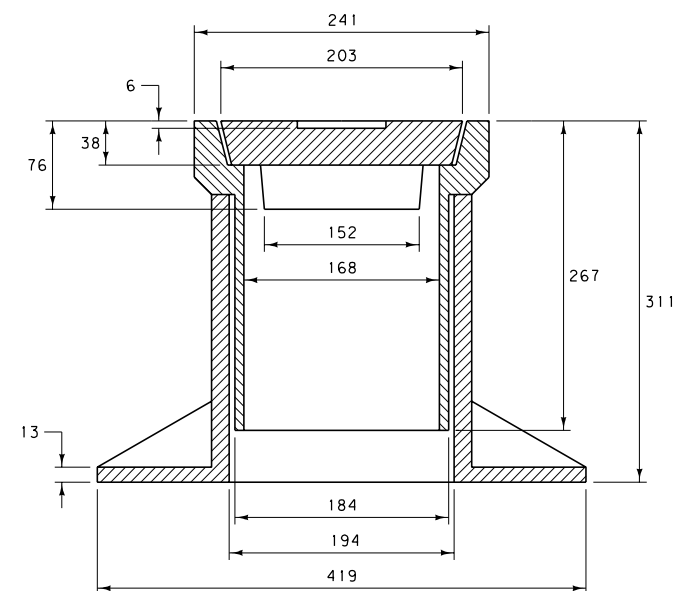
| DETAILED DRAWING   |                                      |
|--|--------------------------------------|
| REFERENCE  | DWG. NO.                             |
| STANDARD SPEC.   | 619-38                               |
| SECTION 619  |                                      |
| OBJECT MARKER DESIGN AND PLACEMENT DETAILS FOR OBSTRUCTIONS ADJACENT TO OR WITHIN HIGHWAYS |                                      |
| EFFECTIVE: APRIL 2006  |                                      |
|       | MONTANA DEPARTMENT OF TRANSPORTATION |



PLAN  
NEENAH FOUNDRY R-1968 TYPE 36-B ADJUSTABLE  
MONUMENT BOX (HEAVY DUTY) OR APPROVED EQUAL



SECTION A-A




SECTION B-B

NOTES:

- ① INSTALL THE 102 mm DIA. PIPE, CONCRETE BASE AND ADJUSTABLE MONUMENT BOX AS DETAILED. PLACE CONCRETE IN THE PIPE UP TO 255 mm BELOW THE TOP OF THE PIPE (DO NOT FILL COMPLETELY.)
- ② POSITION THE CENTER OF THE PIPE TO WITHIN 13 mm HORIZONTALLY OF THE DESIRED COORDINATES AND CENTER THE MONUMENT BOX OVER THE PIPE.
- ③ DEPENDING ON CONTRACT REQUIREMENTS, EITHER MDT FORCES UNDER THE DIRECTION OF A MONTANA PROFESSIONAL LAND SURVEYOR OR CONTRACTOR FORCES UNDER THE DIRECTION OF A MONTANA PROFESSIONAL LAND SURVEYOR WILL BE REQUIRED TO SET AND MARK THE BRASS OR BRONZE MONUMENT WITHIN THE BOX AFTER CONSTRUCTION. THE MONTANA PROFESSIONAL LAND SURVEYOR WILL BE REQUIRED TO PREPARE AND FILE CORNER RECORDATIONS IN ACCORDANCE WITH STATE STATUTES, ADMINISTRATIVE RULES OF MONTANA AND PROVISIONS OF THE MDT SURVEY MANUAL. PROVIDE COPIES OF FILED CORNER RECORDATIONS TO THE MDT ENGINEERING PROJECT MANAGER.
- ④ AN ACCEPTABLE BRONZE MONUMENT IS THE "BERNTSEN C25DB" OR APPROVED EQUAL. AN ACCEPTABLE BRASS MONUMENT IS THE "SURV-KAP M/M-BCS-2 1/2 D" OR APPROVED EQUAL.
- ⑤ ALL CONCRETE IS CLASS DD OR APPROVED EQUAL.

ALL DIMENSIONS ARE MILLIMETERS  
(mm) UNLESS OTHERWISE NOTED.

| DETAILED DRAWING   |   |
|--|---|
| REFERENCE  | DWG. NO.                                |
| STANDARD SPEC.   | 900-15                                  |
| SECTION  |   |
| ADJUSTABLE<br>MONUMENT BOX   |   |
| EFFECTIVE: APRIL 2006  |   |
|  serving you with pride | MONTANA DEPARTMENT<br>OF TRANSPORTATION |